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WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
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Chicago, Ill. No. 43 June, 1945

Bibliography: Mites

Williams, Roger W. A bibliography pertaining to the mite family Trombidiidae, Amer. Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 32(3), Nov. 1944, pp. 699-712.

The chiggers and their allies, some of which are involved in transmission of human diseases. They include parasites of wildlife.

Classification: Anatidae

Delacour, Jean, and Ernst Mayr. The family Anatidae, Wilson Bulletin (Josselyn Van Tyne, University of Michigan, Ann Arbor. 50 cents a copy. Reprints of this article 50 cents each), 57(1), March 1945, pp. 4-54; 7 pls., 24 figs., 1 table.

Views of the authors as to revised classification of the ducks, geese, and swans, having a tendency toward greater inclusiveness of genera and higher groups than in prevailing acceptations. Bibliography of 20 titles.

Classification: Geckos

Klauber, Laurence M. The geckos of the genus Coleonyx with descriptions of new subspecies, Trans. San Diego Soc. Nat. Hist. (San Diego, Calif.), 10(11), March 1945, pp. 133-213; 2 maps.

History of knowledge of the genus; discussion of characters; descriptive treatment of 12 species and subspecies; relationships; habits; specimens are listed and ranges are stated and mapped; keys; 7-page bibliography.

Conservation

Committee. Hearings before the Select Committee on Conservation of Wildlife Resources, House of Representatives (Washington, D. C.), Seventy-eighth Congress, Second Session . . . November 1944. 500 pp., numerous tables, 1945.

This report upon the accomplishments and plans of Federal agencies concerned with wildlife conservation is now far more complete in that respect than the official annual reports which have been reduced by wartime requirements for paper economy. To illustrate, the Fish and Wildlife Service, which had 16 pages in its annual report for 1944, has 115 pages of statement and discussion in this document. As in other years, the Committee report also contains much information inaccessible, or not readily accessible, elsewhere. Examples are: the apportionments of Federal aid funds among the states, list of approved wildlife restoration projects, estimates of the populations of big game, fur-bearing, and predatory, animals on the national forests, list of national wildlife refuges on reclamation projects and in grazing districts, and estimated mammal populations of the national parks and some of the national monuments. The agencies represented in this report include the: Bureau of Reclamation, Fish and Wildlife Service, Forest Service, U.S.A. Corps of Engineers, National Park

Service, and Soil Conservation Service. There are also letters reporting on wildlife conservation activities of the states.

Conservation

Gabrielson, Ira N. Conservation in the future, Trans. Ninth N. A. Wildlife Conference 1944.(American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 49-61.

The needs in land and water management as seen by wildlife proponents are pointed out and means of providing them through research, extension, and management are suggested. Acquisition of land by public agencies (not altogether Federal) is necessary. Recreation based upon wildlife promises to be of growing importance in the postwar period and adequate provision for it must be made. Education must be continuous as "Only an educated people can understand the necessity for practicing self-restraint in the utilization of these basic resources, and will support the machinery necessary for their perpetual conservation."

Conservation: Bighorn

Halloran, Arthur F. History and present status of bighorn in south-central New Mexico, Journ. Mammalogy (Ernest T. Hooper, University of Michigan, Ann Arbor. $1.00 a copy), 25(4), Nov. 1944, pp. 364-367.

Ovis canadensis mexicana. Discussion of early records, description of the range, and summary of the present status of the animals and measures being taken for their conservation, here quoted: "After having been a state game refuge for several years, the most favorable bighorn range of the southern San Andres Mountains was set aside in 1941 as the San Andres National Wildlife Refuge of the Fish and Wildlife Service, U. S. Department of the Interior. The majority of the remaining sheep are doubtless in this new refuge although persistent reports indicate that a few bighorns can still be found in the more northerly parts of the range, as well as to the south in the Organ Mountains. Under protection on the refuge the bighorns are slowly increasing. Ten lambs were reported in 1942 and the 1943 crop of lambs also numbered at least 10. The total present (1943) bighorn population is more than 60. This estimate is based on a field survey of animals seen, and on sign and tracks. Some water supplies have been developed and present plans call for more of this important work. Preliminary food studies based on browse utilization and field observations indicate competition between the sheep and the numerous mule deer. A successful public hunt for bucks and does was held in 1942 with the cooperation of the New Mexico State Game and Fish Commission to reduce deer numbers and plans are being laid to continue this herd regulation. Thus a start has been made in the management of the small band of Mexican bighorns on one of their ancestral ranges." Bibliography of 14 titles.

Conservation: Bighorn

Pulling, Albert Van S. Non-breeding in bighorn sheep. Journ. Wildlife Management (F. F. English, 306 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 155-156.

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From observations on the Desert Game Range, Nevada. Conditions in most respects appear favorable but there was a poor lamb crop in 1944, possibly due to an excess of rams. "There is as yet no proof for the theory set forth here; it is put on record solely in the hope that other observers may search for or think of something to throw light on the sheep problem. I am convinced that periodical non-breeding or more correctly non-lambing is the reason why local bighorns do not reach a saturated population. The same condition may prevail in other states and with other subspecies of sheep."

Conservation: Endangered species

Jackson, Hartley H. T. Conserving endangered wildlife species, Trans. Wisconsin Acad. Sciences, Arts, and Letters (D. B. Morgan, 211 Genetics Bldg., University of Wisconsin, Madison. $4.00 a copy), 35, 1944, pp. 61-89,

Discussion of the causes of reduction and extinction, including the influence of man, natural environmental changes, weather, overspecialization, and disease. Summary of recent extinctions and account of at present endangered species. Status of a number of animals that have benefitted by conservation efforts by man. Suggestions are made as to preserving species by organization, legal protection, sanctuaries, and improvement of habitat. Bibliography of 31 titles and list of private organizations engaged in conservation activities.

Conservation: Swan, Trumpeter

Delacour, Jean. Government refuges are saving the trumpeter swan, Animal Kingdom (New York Zool. Soc., 630 Fifth Ave., New York, 20), 47(6), Nov.-Dec. 1944, pp. 151-156, 6 figs.

Brief review of swans of the world and of means of identifying the trumpeter; average weights and measurements are recorded. Suggestions are made as to the reasons trumpeters decreased more rapidly than whistlers. From a low of about 60 birds in the United States, trumpeters increased under protection on the Red Rock Lake Refuge and Yellowstone National Park to some 280 in 1944. Simple transplanting had little result but a program to move cygnets, rear them in a new favorable locality, and keep them pinioned in pens for breeding has been started and it is believed will be effective in establishing additional colonies of the birds.

Conservation: Waterfowl

Bellrose, Frank C., Jr. Duck populations and kill. An evaluation of some waterfowl regulations in Illinois, Bul. Illinois Natural History Survey (Urbana), 23(2), Nov. 1944, pp. 527-572, 6 photos, 22 figs., 16 tables.

An analysis, in the light of extensive information on the numbers of waterfowl and of the kill, of the effect of the principal Federal duck hunting regulations as they applied to Illinois, 1929-1944. Each of these provisions is thoroughly discussed and the conclusions are summarized. A few paragraphs from the author's conclusions are:

"In general, the duck species that migrate through Illinois during the early part of the fall migratory season are the ones most easily killed. Ducks of many species are most easily killed during the early part of the season, probably because at that time juveniles predominate in the population." "Although in Illinois, the total duck bag does not vary proportionally with the number of days in the hunting season, altering the length of the season is one of the most expedient ways to regulate the duck kill." "Evidence derived from records of the kill of ducks at one Illinois River valley club that furnished good shooting shows a close correlation between legal bag limits in the lower figures and the number of ducks killed per hunter-day. The higher the bag limit, the less it seemed to influence the duck kill; there was much less difference between actual daily bag and legal limit when the limit was 10 than when it was 25. The individual daily bag limit is an effective regulatory measure in management of migratory ducks in Illinois. Special protection has in some years been given through reduced bag limits to several species of waterfowl: canvasbacks, redheads, ruddy ducks and bufflehead. Some doubt exists as to the effectiveness in Illinois of this measure in reducing the kill of species it is intended to protect. While wood ducks were killed in considerable numbers even when given complete legal protection, the regulation permitting one such duck in bag or in possession probably increased the kill as much as two-thirds. The hunting mortality rate of wood ducks in 1942 and 1943 was comparable to the kill of other species of ducks under no special bag restriction. Whether the productivity of the wood duck will keep pace with the increased kill must be determined by closely checking the population. In 1933, when use of bait and live decoys was permitted, the kill of ducks in the Illinois River valley was, it is estimated, 8 to 11 times as great in proportion to the population as in 1941, when use of bait and live decoys was banned." "Restrictive waterfowl regulations enacted in recent years have aided in the survival of migratory ducks in North America. Available data indicate that over the North American continent the proportional kill in the past 10 years was about half that in the previous decade." Bibliography of 16 titles.

Conservation: Waterfowl

Soper, J. Dewey. Canadian waterfowl management problems, Trans. N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 277-291.

Waterfowl sanctuaries, park areas, game preserves, and public hunting areas are discussed. Under the Prairie Farm Rehabilitation Act, more than 20,000 water projects have been developed, totalling some 64,000 acres. Since 1930, precipitation has increased, improving conditions for waterfowl. Botulism, although reduced by more abundant water, remains a menace. The role of the blood parasite (Leucocytozoon anatis) and various predators is briefly mentioned. Feeding of waterfowl is rarely required, but the birds do some damage to crops. Protection under the Migratory Birds Convention is outlined.

Control: Aquatic vegetation

Steenis, John H., and Clarence Cottam. A progress report on the marsh and aquatic plant problem: Reelfoot Lake, Journ. Tennessee Acad. Sci. (Kendall Born, Tennessee Division of Geology, Nashville. 50 cents a copy), 20(1), Jan. 1945, pp. 6-19.

Description of the Lake and of plant succession in it. Account of efforts to improve the lake as a home for wildlife through control (mainly by underwater cutting) of aggressive vegetation, especially giant cut-grass, spatterdock, lotus, and coontail, and recommendations for supplementary planting. Bibliography of 11 titles.

Control: Aquatic weeds

Uhler, Francis M. Control of undesirable plants in waterfowl habitats, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 295-303.

Marsh and water plants that may become objectionably abundant in waterfowl habitats are listed and control operations are discussed. Burning, applying chemicals, cutting by mechanical devices, manipulating water levels are the principal methods treated. Manual operations and biological control are more briefly mentioned. Bibliography of 11 titles.

Control: Blackbird damage to corn

Cardinell, H. A., and D. W. Hayne. Damage to corn by red-wings, Mich. Agr. Expt. Sta. (East Lansing) Quarterly Bul., 27(1), Aug. 1944, reprint 9 pp., 4 figs.

This damage, which may be severe, is compared with that done by crows and fox squirrels. The results of tests of control methods are reported. Authors' summary: "(1) Damage to corn by red-wings may be expected any time after the silk is dry; (2) severe damage is preceded by at least a few days of damage at a low rate, giving opportunity to apply protection; (3) the exact areas in which damage by red-wings occurs may shift from year to year; (4) nothing is gained by early harvest of corn in an attempt to avoid bird damage, since the gains from proper maturing equal or may exceed the losses from birds; (5) protection by a shotgun patrol is expensive at the cost of labor prevailing in Michigan; (6) protection by an automatic acetylene exploder is efficient and has not been observed to deteriorate after periods of use; (7) protection by rags hung in the field is less efficient than protection by an exploder, and effective for shorter periods, but costs less; (8) both protection by exploder and protection by rags appear to be more efficient after a few days of use than during the first day or two."

Control: Coot

Sooter, Clarence A. Relations of the American coot with other waterfowl, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 96-99.

Coots appear to be increasing relatively to ducks. Observations of the author and others of relations between birds of these groups are recounted and discussed. Conflict is of territorial origin and seldom involves actual injury. "On areas where observations indicate that coots may be limiting the production of other birds, it would seem wise to initiate more intensive studies to determine the exact relationships, but any efforts at control of coots should be delayed until the results of such studies are available."

Control: Fox, Red

Robinson, Milton O. Den hunting as a means of fox control, N. Dak. Agricultural College (Fargo), Extension Service, Special Circ. A-72, April 1944, 6-page (4 x 9 ins.) folder, 2 photos.

The Northern Plains red fox "has become so numerous locally and destructive to poultry flocks and young lambs that control measures must be introduced to protect the farmers' interests." This circular discusses qualifications of the den hunter, describes the denning sites, and breeding and other habits of the fox, suggests methods of finding dens and removing pups, and makes brief suggestions on trapping and shooting the animals.

Control: Mouse, Pine

Davis, L. L. The pine mouse in your orchard, Tennessee State Horticultural Soc. Proc., 58, 1943, pp. 48-50.

The loss in apple orchards may be $5.00 or more per acre per year, preventable by control measures costing a few cents. The damage is described, and the habits and life history of the mouse are summarized. Control by poisoning with strychnine and zinc phosphide is recommended.

Control: Muskrat

Nagel, W. O. Controlling muskrat damage in ponds, Missouri Conservationist (Missouri Conservation Commission, Jefferson City), 6(4), April 1945, pp. 10-11, 3 figs.

Precautions while constructing the pond and steps to take if a completed impoundment must be cleared of muskrats.

Control: Port rodents

Morgan, M. T., James Fisher, and J. S. Watson. Rodent control in the area of the Port of London Health Authority, Medical Officer (Messrs. Hodgetts, Ltd., 36-8 Whitefriars St., London, E.C. 4, England. 1 shilling a copy), July 31, 1943, pp. 37-8; August 7, 1943, pp. 45-6. Also as a 4-page reprint with 4 graphs (Bureau of Animal Population, University Museum, Oxford, England).

The history of rodent control in the Port area is sketched and the methods of the work are described under trapping, poisoning, and fumigation. The distribution and breeding season of the rats and mice also are discussed. From authors' conclusion: "A stage has quite definitely been reached where it may be said, without undue optimism, that, providing rodent control is maintained at the same pitch of intensity, heavy infestation in any part of the dock area is a thing of the past. Moreover, colonisation is now so restricted that the great bulk of activity will, with few exceptions, be confined henceforth to the destruction of scattered trespassers and small house infestations." The cost of the work has been defrayed by a lump sum contribution from the Port of London Authority and by weekly payments by tenants according to their needs for rodent control.

Control: Puma

Young, Stanley P. Mountain lion trapping, U. S. Dept. of the Interior, Fish and Wildlife Service Circ. 6 (Supt. of Documents, Washington, D. C. 5 cents a copy), 7 pp., 4 figs., 1945.

Notes on the distribution and food habits of the animal, including its depredations upon livestock, and upon control by hunting, poisoning (not recommended), and trapping.

Control: Rats and mice

Elton, Charles. Extermination of rats and mice. Ministry of Food (University College, Gower St., W.C. 1, London, England), 8 pp. (8 x 6-1/2), Aug. 1944.

Rats destroy food, do other damage, and carry disease but they can be controlled. This pamphlet is devoted to telling how, from outlining a campaign to giving instructions as to prebaiting, poisoning, trapping, gassing, and ratproofing. The brochure also comments on the distinctive characteristics of the brown and black rats and includes a brief section on the control of mice.

Control: Rodent

Storer, Tracy I. Field rodent control, by destruction of burrows, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 156-157.

Suggests subsoil plowing and use of explosives to destroy burrows.

Control: Water chestnut

Gwathmey, John H. Potomac River cleared of 'floating islands', Maryland Conservationist (514 Munsey Bldg., Baltimore 2, Md.); 22(1), Winter 1945, pp. 21-23, 5 photos.

Popular account of the plant, its establishment in the United States, and particularly in the Potomac River. There it spread rapidly, choked out

other water plants, and obstructed navigation. Control mainly by underwater cutting is reported successful, and wild celery is reappearing. Reprinted from the Richmond (Va.) Times-Dispatch.

Control: Waterfowl depredations

Day, Albert M. Control of waterfowl depredations, Trans. N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 281-287.

Restriction of habitat coupled with increase in numbers of waterfowl has inevitably resulted in crop depredations. To keep public respect for conservation measures and organizations, it is necessary to take active steps to control or offset damage. Such measures include lengthening of the hunting season, issuing individual and community permits to shoot out of season, and encouraging the use of preventive devices. Illustrative examples of depredations are those of mallards in grainfields in Colorado, of widgeons in vegetable seed producing areas in Washington, and of pintails and other ducks on vegetable crops in the Imperial Valley of California. Damage to rice in the Sacramento Valley assumed great importance owing to wartime needs and advancing prices. The special measures contemplated to relieve this situation are outlined.

Destruction: Highway mortality

Bugbee, Robert E. A note on the mortality of snakes on highways in western Kansas, Trans. Kansas Acad. Sci. (University of Kansas, Lawrence. 50 cents a copy), 47(3), March 1945, pp. 373-374, 1 table.

Tabulation of 11 individuals along gravel, and 46 along asphalt, roads (representing 8 species) in 260 miles of driving. This is a wartime record with reduced traffic. "Such slaughter seems tragic when it is well known that most species of snakes are harmless and help to keep down the rodent and insect populations that would otherwise destroy valuable crops."

Diseases and Parasites: Botulism

Alcorn, J. R. Botulism in the Carson Sink, Nevada, Condor (W. Lee Chambers, Robinson Road, Topanga, Calif. 50 cents a copy), 46(6), Nov.-Dec. 1944, p. 300.

Occasionally conditions in this area favor outbreaks of botulism; one in 1943 is the subject of this note. Nineteen species of birds are known to have been affected and it is estimated "that tens of thousands of birds died from August to December" of the year noted. Symptoms are briefly indicated. Coyotes and ravens were feeding on the sick and dead birds.

Diseases and Parasites: Lead poisoning

Cheatum, E. L., and Dirck Benson. Effects of lead poisoning on reproduction of mallard drakes, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 26-29, 3 tables.

Review of literature on lead poisoning in waterfowl (6 titles cited) and account of experiments with captive birds. There was no significant difference in hatchability between eggs fertilized by the drakes that had recovered from lead poisoning and those from control birds. There was also no difference in mortality of the young.

Diseases and Parasites: Ornithosis

Levinson, David C., John Gibbs, and Joseph T. Beardwood, Jr. Ornithosis as a cause of sporadic atypical pneumonia, Journ. Amer. Medical Assoc. (535 N. Dearborn St., Chicago, Ill. 25 cents a copy), 126(17), Dec. 23, 1944, pp. 1079-1084, 4 figs.

Six cases of atypical pneumonia in the Philadelphia area were identified as ornithosis by the complement fixation test. Pertinent literature is reviewed and the clinical features and histories of the observed cases are recorded. It is assumed that the source of the infection was pigeons and ornithosis was demonstrated in 6 of 14 pigeons examined. The authors believe "the virus of ornithosis may be responsible for many sporadic cases of primary atypical pneumonia." [There appears to be a tendency in this paper to draw conclusions unwarranted by the facts presented. Certainly it is to be hoped that the findings will not be taken as an excuse for warfare on city pigeons.]

Diseases and Parasites: Plague

Brown, John H. A note on the probable relationship of flea index to epizootic plague in ground squirrels in Alberta, Journ. Ent. and Zool. (Pomona College, Claremont, Calif.), 36(3), Sept. 1944, pp. 70-71.

Extent of infection of Richardson's ground squirrels with plague; notes on habits of the animals; suggestion that an average of 2 or more fleas per individual indicates some abnormality among the population of these rodents, which may be plague.

Diseases and Parasites: Psittacosis

Dunnahoo, G. L., and Brock C. Hampton. Psittacosis, Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 60(13), March 30, 1945, pp. 354-357, 2 tables.

Review of literature (7 titles cited) on this disease and sketch of its history in the United States. After the first serious outbreak in 1929-30, restrictions on the importation of parrot vectors were put into effect and the number of human cases reduced. There was a moderate resurgence, however, in 1941 and 1942. Of a shipment of 113 parrots and parrakeets quarantined at Brownsville, Texas, in 1944, 108 died of psittacosis and upon autopsy the remainder were found to be infected. Present and possible future regulations to control the disease are discussed.

Diseases and Parasites: Rabies

Compton, Lyle S. Rabies in wild foxes, Cornell Veterinarian (P. P. Levine, Ithaca, N. Y. 75 cents a copy), 35(1), Jan. 1945, pp. 68-72.

Incidents connected with an outbreak of rabies in Chautauqua County, N. Y., most of which served to show the weaknesses of human nature. For control, including the elimination of many dogs, wardens of a fearless type were appointed. Politics have no place in rabies control. A vigorous educational campaign also was carried on which was successful in bringing about public cooperation. Licensed dogs were vaccinated and unlicensed ones were eliminated. Veterinarians believe, if widespread vaccination as a normal procedure can not be obtained by cooperation, that it should be made compulsory. Muzzling has proved impossible to enforce. [Congratulations on leadership that recognized the domestic dog as the reservoir of the disease and did not try to put the entire onus upon a wild animal.]

Diseases and Parasites: Salmonellosis

McNeil, E., and W. R. Hinshaw, Snakes, cats, and flies as carriers of Salmonella typhimurium, Poultry Science (Poultry Dept., State College, Pa. 75 cents a copy), 23(5), Sept. 1944, pp. 456-457.

Animal reservoirs other than turkeys are responsible for some of the outbreaks of salmonellosis in those birds. This paper records the isolation of the causative organism from gopher and garter snakes and the domestic cat. Calif.

Diseases and Parasites: Tularemia

Parker, R. R. Tularemia: spontaneous occurrence in the chipmunk, U. S. Public Health Reports (Supt. of Documents, Washington, D. C. 5 cents a copy), 60(1), Jan. 5, 1945, p. 17.

In an individual from Kootenai County, Idaho.

Diseases and Parasites: Acarina, chiggers

Ewing, H. E. The trombiculid mites (chigger mites) and their relation to disease, Journ. Parasitology (Science Press, Lancaster, Pa. $1.50 a copy), 30(6), Dec. 1944, pp. 339-365, 8 figs. [Frontispiece is a portrait of the author.]

Notes on life histories; wildlife hosts include mammals, birds, reptiles, and amphibians; classificatory characters are illustrated and a key to the genera is presented; the species known to transmit disease are more fully treated; protection against infestation and control of chiggers in nature are discussed. Bibliography of 5 pp.

Diseases and Parasites: Acarina, Ixodidae

Bishopp, F. C., and Helen L. Trembley. Distribution and hosts of certain North American ticks, Journ. Parasitology (Science Press, Lancaster, Pa. $1.50 a copy), 31(1), Feb. 1945, pp. 1-54, 18 figs., 15 tables.

The importance of each species treated as an agent in disease transmission is summarized and the distribution outlined by text and map; hosts (including those among wildlife) are listed or tabulated and a list of their common and scientific names is presented. Two-page bibliography.

Diseases and Parasites: Diptera

Neff, Johnson A. Maggot infestation of nestling mourning doves, Condor (W. Lee Chambers, Robinson Road, Topanga, Calif. 50 cents a copy), 47(2), March-April 1945, pp. 73-76.

Author's summary: "Blowfly maggots parasitizing nestling Mourning Doves in the San Joaquin Valley of California were identified by Dr. David G. Hall as an undescribed species, while all those found in nests of other species of birds were identified as Protodalliphora metallica. Attack of these maggots upon nestling Mourning Doves appeared to be an important factor in nest mortality in this area between 1936 and 1940. Nestlings fell to the ground as they attempted to dislodge the maggots. Specific studies on the extent of loss actually due to this factor were not made. The frailty of nests of Mourning Doves does not appear to be a hindrance to this parasitism, since as many as 85 maggots were found in a single nest. When mature they fall to the ground and pupate under debris on top of hard soil, or in the top eight inches of soft soil. The pupal period was found to be ten days. Hyperparasites of the species Mormoniella vitripennis were abundant at times. Ants were seen carrying away maggots that had been shaken to the ground."

Diseases and Parasites: Diptera, Hippoboscidae

Herman, Carlton M. Hippoboscid flies as parasites of game animals in California, California Fish and Game (Ferry Building, San Francisco 11), 31(1), Jan. 1945, pp. 16-25, 4 figs.

Illustrations and notes on the life histories of species common in California, especially those infesting deer, antelopes, and birds. Their relation to blood parasites and their own mite parasites are discussed. Bibliography of 17 titles.

Diseases and Parasites: Ectoparasites

MacCreary, Donald. Some ectoparasites, excluding Ixodoidea, of Delaware mammals, Journ. Economic Entomology (E. N. Cory, College Park, Md. 75 cents a copy), 38(1), Feb. 1945, pp. 126-127.

List of species identified (and their hosts) of Acarina, Anoplura, Hemiptera, Coleoptera, and Siphonaptera.

Diseases and Parasites: Hemiptera, Triatominae

Usinger, Robert L. The Triatominae of North and Central America and the West Indies and their public health significance, Public Health Bul. 288 (Supt. of Documents, Washington, D. C. 25 cents a copy), 83 pp., 12 pls., 5 figs., 1944.

These bugs subsisting on the blood of vertebrate animals are potential disease vectors and are known carriers of the serious Chagas' disease. Animals known to be reservoirs of this malady, and serving as hosts to Triatominae are listed. They include a variety of wildlife, wood rats in greatest frequency. The publication is a full systematic treatise of the bugs indicated in the title.

Diseases and Parasites: Protozoa, Trichomonas

Morgan, Banner B. Host list of the genus Trichomonas (Protozoa: Flagellata). Part II Host-parasite list, Trans. Wisconsin Acad. Sci., Arts, and Letters (B. B. Morgan, 211 Genetics Bldg., University of Wisconsin. $4.00 a copy), 35, 1944, pp. 235-245.

The hosts include representatives of 3 phyla of invertebrates and of 5 of vertebrates.

Diseases and Parasites: Siphonaptera

Prince, F. M. Descriptions of three new species of Dactylopsylla Jordan and one new subspecies of Foxella Wagner, with records of other species in the genera (Siphonaptera), Canadian Entomologist (R. W. Thompson, Ontario Agricultural College, Guelph, Canada), 77(1), Jan. 1945, pp. 15-20, 1 pl., 1 fig.

The new forms are from Thomomys; the list includes parasite and host records of the two genera from several western states of the U.S.A.

Diseases and Parasites: Siphonaptera

Traub, Robert. New North American fleas. Field Museum of Natural History (Chicago, Ill.), Zool. Ser. 29(15), Dec. 1944, pp. 211-220.

Forms described as new from the United States are: Epitedia stanfordi from Peromyscus truei (Utah), Peromyscopsylla duma from various mice (Utah), and Doratopsylla hamiltoni from shrews (Illinois and New York). There is a key to 6 species of Epitedia known from the United States. Bibliography of 11 titles.

Diseases and Parasites: Siphonaptera, Hectopsylla

Augustson, Gustaf F. Further report on a chigoe-like flea from California with a discussion of the true chigoe, Tunga penetrans (Linn.), Bul. Southern Calif. Acad. Sci. (Exposition Park, Los Angeles), 43(3), Sept.-Dec. 1944, pp. 119-121, Pl. 27.

Hectopsylla psittaci on the Pacific horned owl. The true chigoe is not yet authentically reported from the United States. Bibliography of 9 titles.

Diseases and Parasites: Siphonaptera of Nebraska

Gates, Doris B. Notes on fleas (Siphonaptera) in Nebraska, Entomological News (1900 Race St., Philadelphia 3, Pa.), 56(1), Jan. 1945, pp. 10-13.

List of 14 species with host and locality records. Bibliography of 10 titles.

Diseases and Parasites: Siphonaptera, Pleochaetoides

Augustson, Gustaf F. A new mouse flea, Pleochaetoides bullisi, n. gen. n. sp., from Texas, Journ. Parasitology (Science Press, Lancaster, Pa. $1.50 a copy), 30(6), Dec. 1944, pp. 366-368, 4 figs.

From Peromyscus, Texas; description, illustrations, comparative notes.

Diseases and Parasites: Trematoda, Strigeidae

Preble, Norman A., and Paul D. Harwood. A heavy infection of strigeids in a kingfisher (Megaceryle alcyon alcyon), Trans. Amer. Microscopical Soc. (James E. Ackert, Kansas State College, Manhattan), 63(4), Oct. 1944, pp. 340-341.

Ohio. More than 650 specimens of at least two species the apparent cause of death. Review of literature, of which 11 titles are cited.

Diseases and Parasites: Of birds

Meade, Gordon M. What kills Cock Robin?, Bulletin to the Schools (University of the State of New York, Albany. 10 cents a copy), 31(7), March 1945, pp. 202-203.

Brief popular resume of the accidents and diseases to which birds are subject.

Diseases and Parasites: Of Canidae

Erickson, Arnold B. Helminths of Minnesota Canidae in relation to food habits, and a host list and key to the species reported from North America, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 32(2), Sept. 1944, pp. 358-372, 1 table.

Review of literature (39 titles cited); food habits of Canidae as reflected by tapeworms; effect of parasites on the hosts; relation of parasitism in wild Canidae to ranch animals. The table summarizes the findings of helminth parasites in 2 species of wolves and 2 of foxes, listing 4 kinds of trematodes, 7 of cestodes, and 10 of nematodes. A list by hosts of helminths reported from North American Canidae is presented as well as keys to the parasites of the orders mentioned and also of Acanthocephala.

Diseases and Parasites: Of cottontail

Portman, Roland W. Winter distribution of two ectoparasites of the cottontail rabbit in Missouri, Journ. Economic Entomology (E. N. Cory, College Park, Md. 75 cents a copy), 37(4), Aug. 1944, p. 541.

The title should have read "two groups of ectoparasites" as two species of ticks and 5 of fleas are mentioned; total and seasonal incidence is recorded. In southern Missouri, ticks are active and tularemia is, therefore, a menace at all times of year.

Diseases and Parasites: Of small mammals

Rankin, John S., Jr. Ecology of the helminth parasites of small mammals collected from Northrup Canyon, Upper Grand Coulee, Washington, Murrelet (Pacific Northwest Bird and Mammal Society, Washington State Museum, University of Washington, Seattle 5. 70 cents a copy), 26(1), Jan.-April 1945, pp. 11-14, 3 tables.

The methods of the study are described and the results are presented, chiefly in tables. Two species of nematodes and 3 of cestodes were found in 131 mammals of 10 species. Their incidence is tabulated by host species and environment and summarized in text. Bibliography of 13 titles.

Ecology: Barometric pressure

Hanson, Harold C. The cottontail and the weather, Trans. Wisconsin Acad. Sci., Arts, and Letters (B. B. Morgan, 211 Genetics Bldg., University of Wisconsin, Madison. $4.00 a copy), 35, 1944, pp. 91-97, 1 fig.

Live catches of rabbits were positively correlated with barometric pressure. Discussion of this and other weather factors in relation to organisms. The author suggests "the existence of a pressure-activity rhythm in many species of small mammals." Bibliography of 16 titles.

Ecology: Carrying capacity, deer

Davenport, L. A., Warren Shapton, and W. Carl Gower. A study of the carrying capacity of deer yards as determined by browse plots, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 144-148.

Progress report on research in the upper peninsula of Michigan. The methods of the experiments are described and the results noted for the various plots. From authors' summary: "It is safe to say that the better type of conifer yards found in northern Michigan will carry two to three deer per acre on a sustained basis during the years of their maximum browse availability. Hardwood yards, on the other hand, will probably not carry over one deer at the most, and many of them less than one deer per acre. x x x The most important fact brought to light, in so far as future management is concerned, is the proportionally smaller number of deer-days of browsing furnished by a given area

when the number of deer is above the sustained carrying capacity of the browse. x x x The higher concentration of deer browsed out an acre in about one-third less deer-days than in the plot having the lower concentration. Thus, in managing a deer yard it is important to find means of preventing undue concentrations in order to step up the carrying capacity."

Ecology: Census methods, deer

Schrader, Thomas A. Roadside deer counts as an emergency census method, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 150-154, 1 fig., 1 table.

Checked by the results of deer drives, four census methods were tried: pellet count, roadside track count, aerial survey, and roadside tally, of which the last showed the most promise. The results obtained in two years are tabulated and discussed in relation to the deer kill. The method appeared to give satisfactory information on the trend of the Minnesota deer population.

Ecology: Overpopulations, deer

Dixon, Joseph S., and Carlton M. Herman. Studies on the condition of California mule deer at Sequoia National Park, California Fish and Game (Ferry Building, San Francisco 11), 31(1), Jan. 1945, pp. 3-11, 7 figs.

Report on an overpopulated area from which some deer have been removed. Mineral deficiencies are evident; feeding by tourists is indirectly, if not directly, harmful; and parasitism is pronounced. Eye-worms (Thelazia californiensis), chiggers (Eutrombicula alfreddugesi), ticks (Dermacentor occidentalis), and louse flies (Hippoboscidae) were found in numbers. From authors' discussion: "The deer in the areas on the Middle Fork have, over a period of years, come more and more to look to the tourists of the park for part of their food. This fact has tended to keep the deer in close proximity to the camps for, when approached, these animals circle back to the same spots. This concentration causes over-browsing in the immediate areas and constant grazing on limited areas. The life cycles of the stomach and intestinal worms are direct and closely tied up with grazing by the animals. Eggs of the worms are deposited with the fecal droppings of the infected animals and develop in the soil. Immature stages of the worms crawl onto blades of grass and are eaten by the deer along with its food. Thus the infections are constantly being built up to a peak. It appears that the intensity of these infections is directly proportional to the amount of grazing done by the deer and the recurrent use of the same pastures by infected deer. The preferred species of browse, such as snow brush and bitter cherry, have been depleted more and more in the area and in many cases actually killed by over-browsing. The deer are forced to utilize the meadows for forage. This builds up a vicious circle of reinfection. This relationship is particularly evident on the summer range at Giant Forest. As well as tending to increase the worm burden, this sequence of events--the shifting to grass forage--undoubtedly tends to reduce the nutritional values of their total diet. Lack of mobility of the resident deer population in these areas seems to be the chief cause of present conditions."

Ecology: Populations, bobwhite

Errington, Paul L. Some contributions of a fifteen-year local study of the northern bobwhite to a knowledge of population phenomena, Ecological Monographs (Duke University Press, Durham, N. C. $1.50 a copy), 15(1), Jan. 1945, pp. 1-34, 23 figs.

History of the work at Prairie du Sac, Wisconsin, and description and map of the area. The study was made under conditions normal to the area and no management was attempted. Predators, buffers, and competitors are treated and the results of semiannual censuses are presented. Consideration of these forms the body of the paper, which discusses winter losses and summer gains in relation to a variety of environmental factors and to the fluctuations of wildlife populations that are known as cycles. The data are treated mathematically and summarized. From author's summary: "It was found that year-to-year differences in many of the conventionally regarded 'limiting factors' had no perceptible influence on basic population trends. Although severe mortality frequently resulted from starvation and weather emergencies, and through the medium of predation, the outstandingly influential factor in the population mechanics of north-central states bobwhites was seen to be their own density relations as modified by what may be termed depression phases." "Similarly, the data showed a strong tendency for rates of nonemergency winter loss (including most loss from simple predation and from inter- and intra-specific adjustment) to follow mathematical patterns determined by density and phase effects. Wintering populations experienced low rates of nonemergency loss and little if any acceleration of loss rates with rising densities as long as the populations remained below thresholds of security; but such loss rates for populations in excess of secure levels tended, when plotted against densities, to define characteristic sigmoid curves." "Despite an apparent lack of synchrony and periodicity in the two main phases of the Prairie du Sac bobwhites and what would seem to be similar phases of this and other species elsewhere, the suggestion is made that depressed rates of summer gain and increased rates of winter loss in relation to density, if not clearly due to emergencies, may be more reliable indications of cyclic behavior than the often overstressed gross fluctuations in numbers of animals. This applies particularly to species that are highly susceptible to confusing emergency losses--as the bobwhite wintering in the northern parts of its geographic range. Of the properties shown by the bobwhite and at least some other higher vertebrates during cyclic depressions, one may be judged significant: a tendency to suffer nonemergency losses more nearly in straight proportion to numbers than at other times. No really satisfactory explanation for phase phenomena, periodic or otherwise, yet seems to be in sight. Current preference is expressed for some sort of cosmic influence possibly modifying the psychology (notably as concerns limits of intraspecific toleration) of the species affected."

Bibliography of 70 titles. The author has carried the analysis of population fluctuations a step further than it has previously attained and has contributed significantly to understanding of a very complex phenomenon.

Ecology: Populations, small mammal

Odum, Eugene P. Notes on small mammal populations at Mountain Lake, Virginia, Journ. Mammalogy (Ernest T. Hooper, University of Michigan, Ann Arbor. $1.00 a copy), 25(4), Nov. 1944, pp. 408-410, 2 tables.

Results from the use of a combined trap-night-quadrat method. The tables show relative abundance of 4 species in two seasons and number of animals per acre (30-64) in 5 habitats. Habitat selection is discussed.

Ecology: Soil fertility

Albrecht, William A. Soil fertility and wildlife--cause and effect, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 19-28, 2 figs.

The vital role of minerals in nutrition and the importance of soil fertility in animal production are stressed. Knowledge derived from work with domestic animals is projected to cover wildlife. A management program based upon these findings "will be one of making wildlife natural by feeding it naturally through the soil. It will be one of educating the people to the appreciation of the soil as the basis of all life in terms of soil fertility."

Ecology: Wildlife in relation to soil fertility

Denney, Arthur H. Wildlife relationships to soil types, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 316-322, 1 fig.

Wildlife productivity is in ratio to soil fertility; illustrative examples are cited. Farming modifies this relationship in ways that are explained. "(1) The distribution of all species of wildlife is primarily determined by soil types and availability of the elements necessary for animal life; and only secondarily by cover and water, and climatic factors; (2) the abundance of any species of wildlife within an occupied range is basically determined by the fertility of the land, and secondarily by the type and intensity of land use, which we submit is also primarily determined by the fertility of the soil; (3) the quality and size of individuals of the species within the limits of its range are also fundamentally determined by the available fertility of the soil and are only slightly affected by the intensity of land use and the scarcity of suitable habitat; (4) perhaps most important of all is the conclusion that wildlife production, like any other crop of the land, is in proportion to the available fertility of the soil and that land which is too infertile to produce satisfactory crops, grass or livestock is also marginal for wildlife." Bibliography of 8 titles.

Economics: Beaver

Perry, Clay. Beaver crisis in the Northeast, American Forests (919 Seventeenth St., Washington 6, D. C. 35 cents a copy), 51(2), Feb. 1945, pp. 72-73, 94-95, 5 photos.

The "seamy side" of beaver restoration, including destruction of trees intended for reforestation, damage to trout streams, flooding of highways, and interference with city water supplies. Conservation officers quoted to the effect that there is little room for beavers in Massachusetts. Recent history in New York from a publication already noticed in WILDLIFE REVIEW (32, Nov. 1941, pp. 40-41). The statement is rather strong but the recommendations boil down to management. Conclusions: "Beavers may be 'friends of the forest,' but in the Northeast they certainly are not friends of the farmer, the railroad man, the highway engineer, or the lumberman; in many areas they are 'misplaced weeds.' The big problem is to keep them in locations where they belong. But it is doubtful if this can be accomplished short of immense expense, or without increased controlled trapping and transplanting of many areas remote from civilization, or through concentrated use of beavers on flood control and water conservation projects as is now done in some regions of the country."

Economics: Damage payments

Anon. Deer, bear damage payments, Wisconsin Conservation Bul. (Wisconsin Conservation Dept., Madison), 10(3), March 1945, p. 15, 1 map.

Entries on the map show payments by counties on account of damage claims during the last two fiscal years; total amount $45,699. "Claims in for the present year indicate a new record."

Economics: Non-resident hunting

Foote, Leonard E. Vermont's wild game resource: non-resident income, Journ. Wildlife Management (P. F. English, 207 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 81-82.

Almost $160,000 is spent in Vermont each year by non-resident hunters. Eighty percent of this amount goes to private business and the remainder to the State Fish and Game Service. Information obtained in response to a questionary is analyzed to show: favorite game species, length of time spent in the field, and expenditures per day and by purposes. Deer hunters make about half of the total expenditures. Each deer killed by non-residents cost about $227 and each head of small game $6.50.

Economics: Wild rice

Moyle, John B. Manomin--Minnesota's native cereal, Conservation Volunteer (State Dept. of Conservation, St. Paul), 8(44), Jan.-Feb. 1945, pp. 29-31, 1 pl.

Since 1939, wildrice has had the same legal status as fish and game and its harvesting has been under State supervision. The acreage fluctuates widely (from 15 to 30 thousand acres) but water stablilization has improved the crop so that the average is around 500,000 pounds. This sells for from 25 to 35 cents a pound before processing. The largest stands are on Chippewa Indian reservations and most of the harvesting is done by Indians. Other items of interest relative to the grain, including its value to waterfowl, are briefly mentioned.

Education: Conservation

Buchheister, Carl W. Natural history education comes first in conservation, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 362-365.

The most important thing in teaching wildlife conservation is to give the children an understanding of how animals live; in other words, they should be taught life itself and its problems. They must further be impressed with the interdependences of living things and their environment and with other people's stake in conservation.

Education: Conservation

Cole, Elizabeth. Conservation teaching, Michigan Conservation (Michigan Dept. of Conservation, Lansing 13), 14(5), May 1945, pp. 4, 11, 2 photos.

How the work is carried on in Michigan, and particularly in Livingston and Ingham counties, with suggestions as to the books, materials, and methods used.

Education: Conservation

Palmer, E. Laurence. "Little climates"--a lesson in conservation extension education, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 354-357.

Conservation education in New York dates back 50 years; some of its methods are discussed. The problems most in need of treatment are those of here and now. Treatment should be in graphic form to appeal to the largest number of people. "To summarize this whole extension business, conservation philosophy has been reduced to simple cartoons and tables which teachers in classrooms could put on the blackboard."

Education: Conservation in Illinois

Osborne, Livingston E. We must modernize our teachings of conservation, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 351-353.

"We should develop in our public schools, in our high schools, a conservation program for children, making conservation a compulsory and accredited subject, because these children will be our citizens of tomorrow and they should understand the real value of conservation." Plans and accomplishments in Illinois are reviewed, including extension through employes of the State Department of Conservation.

Education: Conservation in Iowa

Hendrickson, George O. Some accomplishments of conservation education in an intensively agricultural state, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 345-350.

Under the 25-year plan for conservation in Iowa, education has produced gratifying results in an increase in contour farming, construction of farm ponds, reservation of woodlands, and tree planting. In the field of wildlife management, control of the harvest and improvement of food and cover for the bobwhite also were achieved through education. Fact-finding as a basis for management was authorized by law and in prewar times a staff of some 20 workers was employed. Results are communicated to the public through news releases and a monthly magazine, The Iowa Conservationist. Achievements are summarized, which it is believed could only have been obtained through education.

Education: Conservation in Texas

Taylor, Walter P. Conservation is not inherited, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 358-362.

"Things are not as well as they should be in the conservation field and the war program is making the situation worse than it ever has been before." Continuous education is needed but it must reach children as well as adults. "The conservation program x x x must rely very largely upon unselfish service to one's fellow man." The educational work planned for Texas is outlined. Its great importance is indicated by pointing out that the conservation of the basic material resources is essential to the survival of civilization.

Food Habits: Damage to cranberries by deer

Boster, D. O. October, 1943, survey of loss of cranberries as a result of deer damage, Proc. 74th Ann. Meeting American Cranberry Growers' Assoc. (Charles S. Beckwith, Sec'y., Pemberton, N. J.), 1944, pp. 12-13, 16, 1 table.

Summary of replies to a questionary (tabulated by counties) which indicate loss of 8.1 percent of the crop as a result of destruction by deer. The value of the berries destroyed is estimated at $89,000.

Food Habits: Damage to pine

Cook, David B., and E. W. Littlefield. Grosbeak damage to Scotch pine, Journ. Forestry (Mills Bldg., Washington 6, D. C. 50 cents a copy), 43(4), April 1945, pp. 269-272, 1 fig.

Description of damage done to Pinus sylvestris plantations by porcupines, squirrels, deer, meadow mice, sapsuckers, and pine grosbeaks. The bird, an irregular winter visitant in New York, has been seen in 7 out of 13 recent years in Rensselaer County. Its general food habits are summarized and its

feeding on terminal buds of the Scotch pine detailed. The damage is such as eventually to spoil the timber form of the tree. "Since Scotch pine is planted more for its cover-producing values than for timber production, this may be of less consequence than in commercially more desirable species. However, when grosbeak injury is added to the other types of faunal damage which are particularly associated with the Adirondacks, the combination may seriously curtail the usefulness of Scotch pine for reforestation there, and may constitute sufficient reason for discouraging its use."

Food Habits: Yield, fruit of woody plants

Spinner, George P., and George F. Ostrom. First fruiting of woody food plants in Connecticut, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, p. 79.

Age at first fruiting in the wild and in nurseries is tabulated for 27 groups (mostly species), including both native and introduced plants. Most of the first yields were light. "Only the dwarf sumac, Japanese honeysuckle, and coralberry produced fruit crops comparable with those on older plants of the same species."

Food Habits: Of cottontail

Sweetman, Harvey L. Selection of woody plants as winter food by the cottontail rabbit, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 25(4), Oct. 1944, pp. 467-472, 4 tables.

Review of the literature, 7 titles of which are cited. Report on observations in Massachusetts the winter of 1942-43; lists of preferred and unpreferred species, discussion, and summary, the latter here quoted: "The winter food choices from 100 available species of woody plants on a three-acre site are analyzed for relative attractiveness as food of the cottontail rabbit, Sylvilagus floridanus mallurus. Attractiveness was based on the amount of feeding injury suffered by the plants. Twenty-two of the 30 families of plants contained species seriously injured by feeding. The species in three other families were but slightly injured, while five families represented each by a single species, were not utilized as food. While not all of the species of the above 22 families were utilized, nearly all of them were, thus showing a taxonomic relationship of the plants utilized as food by the rabbits. Fifty-three of the 100 species of plants sufficiently tender and within reach of the rabbits were chosen so frequently as food as to be extensively injured. The availability of preferred food plants as staghorn sumac, apple, birches, maples, etc., was adequate throughout the winter so that the rabbits had free choice at all times. Twenty-one species were slightly attractive, which in the absence of more suitable food would likely have suffered extensive injury. Twenty-six species of plants remained practically uninjured throughout the winter."

Food Habits: Of cottontail

Dice, Lee R. Some winter foods of the cottontail in southern Michigan, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb. 1945, pp. 87-88.

Field observations on use of honey-locust pods and pine and spruce needles.

Food Habits: Of coyote

Murie, Olaus J. Notes on coyote food habits in Montana and British Columbia, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb., 1945, pp. 33-40, 3 tables.

The results of analyses of scats from interior British Columbia and two localities in Montana are tabulated and discussed. The leading food item in each of these localities was rabbits. Previous studies of coyote food habits are reviewed and the author concludes: "If I may presume to summarize the feeding habits of the coyote, I may say that usually it seeks an abundant animal form, whose habits are such that it lends itself to easy capture on a scale large enough to furnish a staple food supply; it is alert for any opportunity to pick up other species, vertebrate or invertebrate; and it seeks the areas of big game concentrations, especially in winter, on the chance of carrion, or the chance of finding an animal at a disadvantage. From the economic standpoint, it can be expected that when livestock become easily available, especially when the natural food fails, the coyote readily takes advantage of the opportunity. This could be expected in the North when the snowshoe rabbits fail, and domestic sheep herds are present. Therefore, the subject of coyote food habits becomes a local problem, not only from the economic standpoint, but also from the standpoint of pure science, depending on the local ecological picture."

Food Habits: Of owl, barn

Davis, W. B. What barn owls eat, Texas Game and Fish (Walton Bldg., Austin, Tex. 10 cents a copy), 1(7), June 1943, p. 18, 1 diagram.

Of 542 creatures captured and eaten by barn owls in Colorado and Jefferson counties, Texas, 499 were small mammals, including 273 shrews, 111 harvest mice, 30 cotton rats, 41 white-footed mice, 15 rice rats, 10 house mice, 3 house rats, 3 pocket gophers, 1 mole, 11 cottontails, and 1 opossum. The remaining items consisted of 28 birds and 15 insects.

Food Habits: Of raccoon

Baker, Rollin H., Coleman C. Newman, and Ford Wilke. Food habits of the raccoon in eastern Texas, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 45-48, 1 table.

Authors' summary: "The food habits of raccoons were studied along the Neches River in three counties of eastern Texas in 1940-42. Field studies were supplemented by laboratory analyses of 344 scats collected in all months and of 23 stomachs and 11 intestines obtained in winter. Acorns and crayfish constitute more than half of the yearly diet and both are consumed in considerable amount at all seasons. Persimmons and grapes were utilized heavily when available and other fruits in smaller amounts. Insects and other invertebrates formed an important part of the diet. Vertebrates were eaten sparingly but species of

water snakes were preyed upon as were winter and spring concentrations of water fowl. Raccoons were found to concentrate in timbered river bottoms during the winter and spring, feeding largely on acorns and crayfish. Under these conditions they are readily trapped. In the summer and autumn the populations appear to be dispersed through the uplands as well as bottomlands in search of seasonal foods."

Food Habits: Of raccoon

Yeager, Lee E., and William H. Elder. Pre- and Post-hunting season foods of raccoons on an Illinois goose refuge, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 48-56, 1 table.

Authors' summary: "Horseshoe Lake Refuge, Alexander County, Illinois, an old ox-bow of the Mississippi River, is 3,544 acres in area, of which about 2,400 acres are open water and cypress-tupelo gum swamp. An 'island' of 1,400 acres is largely cleared; it is used in summer to grow food for geese and as a site for feeding geese in winter. About 40,000 to 50,000 Canada geese winter on the refuge; the annual kill has varied from 7,000 to 18,000, and recently is thought to average about 10,000. Crippling losses amount to 1,000 to 2,000 birds each season, almost all of which become food for raccoons and other carnivores. To compare the effect of this heavy crippling loss on the diet of raccoons, 116 pre-hunting season scats and 107 post-hunting season scats were analyzed. By bulk, the pre-hunting (early autumn) food was 33.8 per cent of animal materials, 30 per cent being insects. In the post-hunting (winter) sample, 72.1 per cent was of animal origin, 65.1 per cent being Canada geese. Vegetable material amounted to 63.5 and 22.5 per cent, respectively, in the two collections. Detritus, chiefly soil and gravel, constituted 2.1 per cent and 4.3 per cent, respectively. For all foods, availability determined the time of maximum utilization. The dominating position of geese over all other foods for raccoons during the winter is the expected result of great abundance, maximum availability, and high palatability. Carnivores other than raccoons utilizing the geese included red foxes, gray foxes, opossums, minks, skunks, and feral dogs. No quantitative measurement of such use by these species was obtained. Limited utilization of the geese by fur animals prevented complete loss, but this return on the number of birds involved, even as a by-product of hunting, is considered inadequate." Bibliography of 14 titles.

Food Habits: Of raptors

Baumgartner, A. Marguerite, and Frederick M. Baumgartner. Hawks and owls in Oklahoma 1939-1942: Food habits and population changes, Wilson Bul. (J. Van Tyne, University of Michigan, Ann Arbor. 50 cents a copy), 56(4), Dec. 1944, pp. 209-215, 4 tables.

Description of the area and methods (pole-trapping, visual counts, study of mammal populations, pellet analysis) of the study. Food items are tabulated and briefly discussed for several groups of raptors. From authors' summary: "Both trapping and field observation in 1939 indicated an abundance of Barn Owls, Marsh Hawks, Short-eared Owls, and Screech Owls, as well as the presence in smaller numbers of nine other predatory species. Populations of rodents,

particularly cotton rats, were similarly high. Pellet analysis indicated that over 66 per cent of the total food items of the predatory birds in 1939 consisted of cotton rats. Following an unusually cold period in late December, 1939, and early January, 1940, both populations of rodents and species of predatory birds whose food had consisted primarily of cotton rats showed a notable decrease or disappeared altogether. The Great Horned Owl, whose food habits are more generalized, and the Cooper's Hawk, which feeds primarily on small birds, were recorded in their usual numbers after the period of unusual cold. In 1941 and the spring of 1942 populations of predatory birds showed a slight increase, and a few cotton rats were again trapped in late June, 1941, the earliest record following January, 1940."

Food Habits: Of raven

Murray, J. J. The food of the raven in Virginia, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(2), April 1945, p. 306.

Report on identification by the Fish and Wildlife Service of bones collected at nesting sites. Surprisingly, flying squirrel remains were predominant.

Food Habits: Of shrew, short-tailed

Eadie, W. Robert. The short-tailed shrew and field mouse predation, Journ. Mammalogy (Emmet T. Hooper, University of Michigan, Ann Arbor. $1.00 a copy), 25(4), Nov. 1944, pp. 359-364, 1 table.

Report on food items found in 4 nests and 200 scats. In frequency of occurrence, insects led but mice remains were identified in 56 percent of the scats. These appeared to be principally those of Microtus pennsylvanicus. An estimate is made that short-tailed shrews may destroy from 14-27 (possibly more) mice per acre during the winter months. Bibliography of 14 titles.

Food Habits: Of snake, water

Lagler, Karl F. Watersnake food, Michigan Conservation, Michigan Dept. of Conservation, Lansing), 14(2), Feb. 1945, p. 9, 1 photo.

Natrix sipedon. Report of laboratory examination of about 200 specimens containing food. "More than half (57 percent) of the watersnakes taken near trout rearing ponds contained the kind of trout being propagated." Those from trout streams had eaten (by frequency of occurrence) trout, 6.6 percent, forage fish, 72.6, lampreys, 6.6, frogs, 7.5, and miscellaneous items. "Specimens from non-trout waters had eaten principally frogs."

Food Habits: Of vulture, black

McIlhenny, E. A. An unusual feeding habit of the black vulture, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(1), Jan. 1945, pp. 136-137.

Eating chopped sweet potatoes put out for deer and nutrias. Louisiana.

History: Prairie grouse

Schorger, A. W. The prairie chicken and sharp-tailed grouse in early Wisconsin, Trans. Wisconsin Acad. Sciences, Arts, and Letters (E. B. Morgan, 211 Genetics Bldg., University of Wisconsin, Madison. $4.00 a copy), 35, 1944, pp. 1-59, 1 fig.

Thoroughly documented studies, reporting for the prairie chicken upon the original range and abundance, habits, migration, and food; the effects upon the bird of agriculture, burning of the prairies, hunting, and trapping; and its fluctuations and decline. The birds have been forced northward into territory not originally occupied; the Wisconsin group is cut off from possible sources of recruitment, and its future cannot be viewed with optimism. The sharp-tailed grouse is more briefly treated as to original range, migration, and decline. There is every reason to believe that under present land policies this species will continue to be plentiful. "Prairie chicken" annals, covering both species, are detailed for the period 1855 to 1897. Bibliography of 208 titles besides numerous references to newspapers.

History: Wildlife conservation in Kansas

Stene, Edwin O. The development of Kansas wildlife conservation policies, Trans. Kansas Acad. Sci. (University of Kansas, Lawrence. 50 cents a copy), 47(3), March 1945, pp. 289-323, 4 photos.

A thorough and well-documented history, tracing conditions from the period of original abundance, through one of severe depletion, to the present era more nearly approaching wildlife management. Two of the photographs are of L. L. Dyche and Lee Larrabee. A biographical sketch of the author, with portrait, appears on pp. 326-327.

History: Wildlife management in Texas

Lay, Daniel W. Brief chronology of wildlife in Texas, Texas Game and Fish (Walton Bldg., Austin, Texas. 10 cents a copy), 3(4), March 1945, pp. 9-13.

The chronology is of attitudes toward, and treatment of, wildlife. By eras the efforts were successively in the fields of prohibition, stocking, management, and education. An interesting and useful compilation.

Life Histories: Age classes, bobwhite

Hendrickson, George O. Age composition of the fall 1944 bobwhite population, Iowa Conservationist (Iowa State Conservation Commission (10th and Mulberry Sts., Des Moines 8), 4(3), March 1945, p. 118, 2 figs.

Classed by wing characters, 731 out of 914 specimens from 14 counties represented young birds--a proportion of 3.7 young to 1 adult. Local variations are discussed.

Life Histories: Bats

Griffin, Donald R. Travels of banded cave bats, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb. 1945, pp. 15-23, 4 figs., 2 tables.

More than 13,000 bats of 6 species were banded in western New England and eastern New York; the results are discussed and summarized. A total of 39 long-distance (10-156 miles) recoveries are reported. Movements up to 125 miles occurred even in winter. The summer population seems larger than that of the winter but all of its retreats have not yet been discovered. Bibliography of 8 titles.

Life Histories: Bats

Wimsatt, William A. Notes on breeding behavior, pregnancy, and parturition in some vespertilionid bats of the eastern United States, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb. 1945, pp. 23-33, 1 table.

Detailed observations on representatives of 4 species. Length of gestation in Myotis lucifugus was estimated to be between 50 and 60 days. Bibliography of 21 titles.

Life Histories: Blackbird, Brewer's

La Rivers, Ira. Observations on the nesting mortality of the Brewer blackbird, Euphagus cyanocephalus, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 32(2), Sept. 1944, pp. 417-437, 3 figs., 2 tables.

Studies made near Reno, Nevada. The causes of nesting losses are discussed in detail under the heads of primary and incidental predation, accidental mortality, human interference, and climatic and miscellaneous factors. The history of 107 nests is tabulated. The higher the nests were built the lower the losses. Protective features are discussed and a summary presented. The mortality (figured upon the number of eggs) was 60.65 percent to the fledgling stage. Probably 50 percent of these young birds perish within a month after leaving the nest.

Life Histories: Bobcat

Rollings, Clair T. Habits, foods and parasites of the bobcat in Minnesota, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 131-145, 2 pls., 4 tables.

Lynx r. rufus. Information is given on weights, measurements, distribution, population, habitat, tracks, range, hunting and other habits, shelters, dens, food, and worm parasites. Author's summary: "(1) Field data on bobcats were gathered in northern Minnesota during 1938 and 1939, mainly in winter, and

50 were collected for studies on food and parasites. Trail notes were used extensively to interpret food habits indicated by stomach analyses; (2) Minnesota bobcats show considerable pelage change with season and age. Large specimens often are called 'lynx cats' and are confused with Canada lynx; (3) in recent years, the northern limit of range for the bobcat has extended 100 to 200 miles to include southern Ontario; (4) spruce-cedar swamps are preferred winter habitat. Winter range is no more than 10 to 15 miles square, often less; (5) an average of 5-1/2 miles was traveled in a night's hunting. Food is obtained largely by scavenging and by hunting small mammals. Birds are seldom sought. Stalking is a favorite method and elevated 'lookouts' along game trails often are used. Deer are seldom attacked; (6) bobcats are stealthy and shy but curious, and often will follow human trails to investigate every bit of scrap thrown aside. Droppings usually are deposited off the trail, preferably on an elevated spot, and sometimes are covered. Bobcats spend the daylight hours mainly in temporary 'rest-shelters'; (7) varying hare, deer, and porcupine comprised over 90 per cent of the foods recovered from 50 specimens. The deer material was largely or all of carrion. Although scarce at the time of this study, the varying hare ranked first among the foods. No evidence of poultry or domestic stock was found in stomach contents; (8) the damage to Minnesota populations of deer and ruffed grouse attributed to bobcat predation is negligible; (9) thirteen different helminth parasites were recovered from the gastro-intestinal tracts of 50 bobcats, 5 apparently not previously reported from this host; (10) because the bobcat assists in the control of the varying hare, porcupine, and certain small mammals, it must be considered beneficial. A state bobcat bounty appears unnecessary and unwise. Its effect would ultimately be harmful to the interests of farmers, sportsmen and others interested in wildlife conservation." Bibliography of 19 titles.

Life Histories: Bobwhite

Leopold, A. Starker. Sex and age ratios among bobwhite quail in southern Missouri, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 30-34, 4 tables.

Report on sexes of some 45 thousand, and age classes of nearly 8 thousand, bobwhites killed in the legal shooting season. There is also some information on weights. Author's summary: "Young of the year constitute from 72 to 83 per cent of autumn populations of bobwhites in Missouri. Year-to-year fluctuations in age ratios, shown to occur in one locality, are attributed tentatively to the effects of spring weather upon reproductive success. Populations in the agricultural regions of the state contain higher percentages of young than those in wooded areas. Such regional differences in reproductive success may be due to the conditions of the nesting environment and/or the degree of hunting pressure. Distortion of the sex ratio in favor of cocks is limited to adults. Young birds have a sex ratio of 50:50. The differential loss of adult hens probably occurs during the breeding season. Bobwhites in Missouri average approximately 21 grams heavier than those in Georgia." Bibliography of 5 titles.

Life Histories: Bobwhite

Studholme, C. R. Bob's private life, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 15(12), March 1945, pp. 4-5, 24-25, 29-30, 8 photos, 3 tables.

In part a popular and generalized account of the life history of the bobwhite, but presenting some detailed information on cover preference, clutch size, nesting success, causes of failure, and movements of banded birds. Most of the nest destruction was due either directly or indirectly to man.

Life Histories: Callospermophilus, Eutamias

Gordon, Kenneth. The natural history and behavior of the western chipmunk and the mantled ground squirrel, Oregon State College Studies in Zoology, 5 (Office of Publications, Corvallis. 75 cents a copy), 104 pp., 12 pls., 13 tables, 1943.

The author presents a list of the species and subspecies of Eutamias and Callospermophilus of western North America, and briefly summarizes the distribution, and describes the habitat of the forms that he studied. Life history topics treated include: movements, dens, food, use of water, and reproduction. Ecology is discussed under the heads of: environmental factors and reactions, community organization, population, and economic relations. Behavior is subdivided as sensory, reactive, and modifiable. Deficiencies in knowledge are noted in a section entitled "The little known." An informative study in which considerable experimentation with the animals in the wild is reported upon. Five-page bibliography.

Life Histories: Catbird

Stoner, Dayton, and Lillian C. Stoner. How fast does a catbird grow?, Bulletin to the Schools (University of the State of New York, Albany. 10 cents a copy), 31(7), March 1945, pp. 217-219, 4 photos.

Summary of observations on increase in weight, bone and feather growth, and body temperature.

Life Histories: Deer, Mule

Robinette, W. Leslie, and Orange A. Olsen. Studies of the productivity of mule deer in central Utah, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 156-161.

Report as to the: fawn crop (60 percent of the does with fawns had one, and the remainder 2); fawn mortality (10.8 percent before predation; the latter may be heavy); sex ratio of fawns (50.7:49.3); weights at birth (average 7.2 lbs.); age classes (of 2,380 does, 28.4 were yearlings); number of does without young (13-15 percent); hunting wastage (15 percent of the deer killed are either not found or abandoned); winter mortality (10.7 percent from all causes);

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net increase (27.8 percent). Concentrated information of the type needed as a guide to management.

Life Histories: Foxes

Seagears, Clayton B. The fox in New York, Conservation Department (Albany, N. Y.) Educational Bulletin, 83 pp., 30 figs., 4 tables, 1944.

Pages 24-37 treating food habits and the significance of fox predation are by Robert W. Darrow. Simultaneous abundance of foxes and scarcity of pheasants brought charges of cause and effect and search for reliable information revealed a dearth which this bulletin was prepared to remedy. It is written in popular style and embellished by cartoons by the major author. The chapter on life history presents information on size and weight, color, mating habits, dens, voice, and diseases and parasites (By Frans C. Goble). There are sections also on range and habitat, abundance and trends, legal status, economic importance, control as by bounties, hunting, trapping, and preparation of pelts. Both red and gray foxes are treated and pertinent literature has been abstracted. The food habits section is summarized under the following headings: "The fox is an omnivorous feeder, eating a wide variety of both animal and vegetable food; year in and year out the items most frequently eaten were rabbits and mice; next to rabbits and mice, fruit and insects occurred most often; game birds comprised a comparatively small part of the fox's bill-of-fare; poultry occurred in a relatively small number of the specimens examined; the items eaten at a given time and place depend mainly on what is most readily available."

The general conclusions of the bulletin are: "(1) Because of the economic importance of the fox as a furbearer and a controller of destructive rodents, plus its recreational value as a game animal, it seems highly undesirable to attempt anything approaching extermination, even if that were possible; (2) at the same time it is equally apparent that the fox is an important predator of small game and in some localities of poultry. It therefore becomes especially desirable, if it is possible to do so, to provide some reasonable measure of control so that excessive abundance of the fox, especially in important hunting areas can be avoided; (3) although there is no direct evidence that hunting and trapping can control the abundance of foxes on a statewide basis, possibly because the take is so small, compared even to the usual number of foxes--nevertheless these two methods seem to offer the only logical hope for ultimate control. Therefore, the stimulation of fox hunting and trapping is highly desirable, and it will, in addition, provide for a greater economic return from this resource; (4) because the bounty system has thus far universally failed to provide such stimulation and because so much money would have to be spent for foxes which are taken anyway before any additional return is even possible, and because the bounty system is subject to a variety of abuses, it is concluded that a bounty system is not desirable for New York; (5) rather, because at present the number of fox hunters and fox trappers is quite limited and because even within these groups the most efficient methods of hunting and trapping are not in general use, it seems highly desirable to institute an educational program designed to interest more people in these activities and to provide them with information as to the best methods. Such a program should be

directed not only to potential trappers and hunters, but to farmers, extension workers and all others who have an interest. It is especially important that it reach the farm boy."

Life Histories: Ground squirrel, Columbian

Shaw, William T. Seasonal and daily activities of the Columbian ground squirrel at Pullman, Washington, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 26(1), Jan. 1945, pp. 74-84, 4 figs.

Citellus c. columbianus. The influence of weather factors upon seasonal activities, and the daily program of the squirrels are discussed. Author's summary: "(1) The Columbian ground squirrel is very definitely diurnal and sun-loving; (2) the activities of the species x x x are largely controlled by seasonal and daily conditions of the sun, wind, temperature, drouth and climatic conditions generally; (3) the activities of aestivation and hibernation are rather clearly related to sex. In coming from hibernation they appear in the order of adult male first, adult female next, with the young of the previous season following. Adult males are the last to return to aestivation; (4) daily appearance from dens in the morning and return in the evening is markedly influenced by sunrise and sunset; (5) seasonal activities are clearly influenced by differences in altitude; the animals coming from hibernation earlier in lower areas than in the higher. Likewise, they return to aestivation sooner in the lower country than in the higher altitudes." Bibliography of 6 titles.

Life Histories: Gull, Great black-backed

Cross, Alfred O. The present status of the great black-backed gull on the coast of Maine, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C $1.00 a copy), 62(2), April 1945, pp. 241-256, 4 pls.

The author reviews changes in the status of breeding sea birds of the Maine coast in the past 25 years and makes a detailed report upon the black-backed gull. This species has increased and spread in recent years, attaining an estimated population of 3,500. These are distributed in a considerable number of breeding colonies, the largest containing 80 pairs. With increase, the birds have become more plentiful also in winter and have increased the scope of their southward migration. "This large gull is an aggressive and destructive bird in its relation to other species which share the same nesting islands." Details are given especially of predation upon the eggs, young, and even adults of eider and other ducks. In some localities, application of control measures appears to be justified. Two-page bibliography.

Life Histories: Hare, Snowshoe

Severaid, Joye Harold. Pelage changes in the snowshoe hare, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb. 1945, pp. 41-63, 16 figs., 5 tables.

Review of literature (19 titles cited), detailed presentation of the author's findings, and comparative discussion of the findings. The pelage change is conceived as occurring in 7 stages, the order of which in the vernal molt is the reverse of that during the autumnal change. The time required for each molt averaged 71.8 days; it was shorter for females than for males. The snowshoe hare is capable of regenerating hair at any time in an area from which it is forcibly removed. The animal has two sets of hair roots, one producing the vernal brown, and the other the autumnal white, pelage.

Life Histories: Loon

Munro, J. A. Observations of the loon in the Cariboo Parklands, British Columbia, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(1), Jan. 1945, pp. 38-49, 2 pls.

Nests, territory and territorial behavior, actions of nesting pairs and parents with young, survival of young, and food (fishes are not essential).

Life Histories: Mouse, House

Orr, Robert T. Communal nests of the house mouse (Mus musculus Linnaeus), Wasmann Collector (University of San Francisco, Calif.), 6(2), Nov. 1944, pp. 35-37.

Regular examination of nests for the purpose of removing young as a control measure revealed that they sometimes contained as many as 25 young of different ages.

Life Histories: Muskrat

Grimm, Wm. C. Analysis of the late fall and early winter muskrat population in northwestern Pennsylvania, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 15(10), Jan. 1945, pp. 12-13, 1 fig., 4 tables.

Sex ratio (6:4), age composition (77 percent young), sizes and weights (average weight 2.4 lbs.). Details are given in the tables. Bibliography of 8 titles.

Life Histories: Prairie chicken

Schwartz, Charles W. The ecology of the prairie chicken in Missouri, Univ. of Missouri Studies (Columbia. $1.50 a copy), 20(1), 99 pp., 16 pls., 8 folded maps, 12 figs., 25 tables, 1945.

This report presents the technical information upon which the author's book, "The prairie chicken in Missouri" was based, and 32 of the photographs used in that fully illustrated work. It treats distribution in relation to environmental factors, populations, life history, food habits, mortality, and management. Summary of the management recommendations is: "Recommended statewide management practices include continuation of the annual spring booming-

ground census, continuation of legal protection, improvement of the habitat by control of overgrazing, late mowing, and burning, and provision for permanent supplies of water. Potential range can be made suitable habitat by increasing the amount and quality of permanent grasslands. Management practices recommended under some very special conditions are restocking, control of damage caused to domestic crops, and the establishment of management areas. Management practices not recommended under present conditions are control of disease, parasites, or predators, opening of the hunting season, and special provision for winter food." Bibliography of 39 titles. Another of the excellent life history and management papers characteristic of the present conservation era.

Life Histories: Raven

Tyrrell, W. Bryant. A study of the northern raven, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(1), Jan. 1945, pp. 1-7, 3 pls.

Notes on present and former ranges of the raven, food, nest, eggs, development of young. Virginia.

Life Histories: Redhead

Low, Jessop B. Ecology and management of the redhead, Nyroca americana, in Iowa, Ecological Monographs (Duke University Press, Durham, N. C. $1.50 a copy), 15(1), Jan. 1945, pp. 35-69, 21 figs., 28 tables.

A thorough study well reported. From author's summary: "The sex ratio was 1.42 males to 1 female among 3,400 redheads." "Ninety of the 160 nests terminated successfully, 48 nests were deserted, and, of 22 destroyed nests, 12 were flooded, 4 destroyed by mink, 2 by crows, and 4 by unknown agents. Recession of water levels, particularly in 1940, caused desertion of 16 nests whereas a comparatively stable water level was correlated with the high percent (72 percent) of nest success in 1939. The apparent intolerance of the females to the laying of eggs in their nests by other ducks resulted in the desertion of 16 nests. The amount of promiscuous laying was inversely proportional to the nesting success and directly proportional to the fluctuation of the water level. The ruddy duck laid in 8.1 percent of the redheads' nests. An average of 9.75 eggs was recorded for 115 complete clutches." "The most extensive nesting cover species were lake sedge (23 percent), narrow-leaved cattail (12 percent), hardstem bulrush (10 percent), and awned sedge (10 percent). The depth of the water in which cover plants were located and proper interspersion and density of nesting cover were more important criteria in choice of nesting sites than was any preference which the ducks showed for any cover plant species. Nesting densities for the important cover plants were as follows: one nest to 3 acres of slender bulrush" [one to 6 of hardstem bulrush, one to 11 of whitetop, one to 13 of sedge, and one to 16 of narrow-leaved cattail]. "The Hardstem Bulrush-River bulrush-Burreed Community was most important as juvenile rearing cover. Brood counts showed that the greatest duckling mortality occurred during the first week of life. Evidence was noted of juvenile mortality from mink and snapping turtle predation, lead poisoning, exposure to weather, congenital disabilities, and trampling by the females x x x The

flight of the juveniles preceded the fall migration of northern redheads by nearly a month. An average of 6.3 juveniles of each brood survived, which represented a 70 percent survival of hatched young. Leeches parasitized 80 percent of the young redheads, but were not found to cause death. Redheads were about five percent of the 1939 birds bagged by hunters. Food plants essential to redheads were abundant in all marshes and in most of the lakes of the research area. Marshes under 25 acres in area should be protected from livestock. An adequate controlled water level is the most important factor to insure the production and utilization of cover and food plants by redheads." Bibliography of 29 titles.

Life Histories: Seal, Harbor

Scheffer, Victor B., and John W. Slipp. The harbor seal in Washington State, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 32(2), Sept. 1944, pp. 373-416, 17 figs., 5 tables.

Phoca vitulina richardii (reasons for this naming given). Considerable information on measurements and weights is tabulated; the pelage is described and illustrated and the skull characters are discussed. Distribution, habitat, seasonal and daily movements, behavior on land and in water, voice, fighting and play, scats, enemies, parasites, length of life, breeding habits, number and care of young, development of the young, food habits and economic status are treated in this comprehensive paper. The authors "are inclined to believe that the gill-netters are justified in their demands for seal control." However as to the complaints of commercial fishermen in general, they say, "Blame for the decline in a local fishery is often directed at the harbor seal whereas it rightfully belongs to selfish or thoughtless practices of man, such as overfishing, the damming of streams, pollution by industrial wastes, and so on. It has long been the opinion of the authors that the proper time to control the native predators of fish is after satisfactory control of shortsighted human practices has been effected. Such public attention as is attracted by the clamor of persons who would slaughter seals on a wholesale basis often detracts a corresponding amount of notice from the objective where it rightfully belongs, namely, evils of outlaw fishery practices."

Life Histories: Sex ratio, ducks

Beer, James R. Sex ratios of ducks in southwestern Washington, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D.C. $1.00 a copy), 62(1), Jan. 1945, pp. 117-124, 1 table.

The results of numerous counts are discussed by species and summarized as follows: "During the fall, winter, and spring observations of 1943 and 1944, 10,180 ducks of 15 species were counted as to sex. For this entire group it was found that there was a sex differential in favor of the males. The ratio was found to be 1.18 to 1. As a general rule, there was little difference in the sex ratios during the changes of season and only a slight tendency for the males to leave the wintering area first. The Anatinae were found to have quite an even sex ratio while the Nyrocinae and Merginae were unbalanced in favor of the males."

Life Histories: Skunks

Campbell, J. E. Skunks of North Dakota, North Dakota Outdoors (State Game and Fish Dept., Bismarck. 5 cents a copy), 7(10), April 1945, pp. 9, 10, 1 photo.

General characteristics, distribution, habitat, and food habits. Both species are regarded as preponderantly beneficial.

Life Histories: Sparrow, Chipping

Walkinshaw, Lawrence H. The eastern chipping sparrow in Michigan, Wilson Bul. (J. Van Tyne, University of Michigan, Ann Arbor. 50 cents a copy), 56(4), Dec. 1944, pp. 193-205, 1 pl., 7 tables.

Report on a life-history study embodying information collected over a period of some 25 years. It deals with migration, territory (well-developed), mating, nest building (by female only), eggs, incubation, care of nestlings, development of the young, nesting success (young fledged from 31 out of 50 nests), roosting, and response to danger. Bibliography of 13 titles.

Life Histories: Sparrow, Clay-colored

Walkinshaw, Lawrence H. Clay-colored sparrow notes, Jack-Pine Warbler (Kingman Memorial Museum, Battle Creek, Mich.), 22(4), Oct. 1944, 3 pls., 6 tables.

Description of the study area in Crawford County, Mich., and life-history notes under the headings of: Territory, nest, eggs, young, nesting success (41 young fledged from 56 eggs), and weights.

Life Histories: Swallow, Cliff

Stoner, Dayton. Temperature and growth studies of the northern cliff swallow, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(2), April 1945, pp. 207-216, 1 fig.

Methods of the investigation are described and the results from 83 nestlings of 35 broods are presented with respect to changes in weight and temperature and bone and feather growth. The findings are compared with those for the barn swallow.

Management: Beaver

Luttringer, Leo A. The odds were against him, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 15(12), March 1945, pp. 12-13, 26, 2 figs.

Review of the history of the fur trade and its effect upon the beaver. Apparently the animal was not entirely exterminated in Pennsylvania, a colony

being reported in 1902. Complete legal protection was afforded in 1903 and restocking was undertaken in 1917. Success was attained, the course of which is sketched, and the animals increased so that an open season was declared in 1934. "During that year 6,455 beavers were taken in 50 of the 67 counties." Subsequent open seasons have yielded smaller returns. The total number of the animals trapped, 1934-44, was 17,162 with a fur value of $205,944.

Management: Bison

Cahalane, Victor H. Restoration of wild bison, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 135-143, 1 table.

Brief statement of original numbers of buffalos, their decline and slight degree of restoration. The much reduced herd in Yellowstone Park was added to by purchased animals in 1902 and from 1907 managed like livestock. Continued increase dictated modification in the program. There were some losses from disease and a disposal program helped to keep down the size of the herd. However, range depletion was marked and artificial feeding was continued. Stopping this pampering and reducing the numbers of the animals to a level the range will easily support, steps necessary to returning the herd to a "wild" status are in process. "As the biological problem of making the buffalo wild is worked out, the park landscape problem will receive careful attention. The eventual objective is the elimination of all ranching operations. All buildings, fences, irrigation ditches and other livestock developments in the Lamar Valley area that are offshoots of the buffalo management program can be removed. It is hoped that in the meantime a satisfactory headquarters for the park horse herd will be found outside of the Lamar Valley. The development at Buffalo Ranch could then be reduced to the ranger station and road maintenance camp. Thus the ancestral winter range of the buffalo, elk and other wildlife would be freed of another infringement and be rededicated still more completely to their needs and to national park use. The last artificial feeding of wildlife would be eradicated. We hope to have wild buffalo--not semidomesticated cattle--in Yellowstone National Park." Bibliography of 8 titles.

Management: Competition

Anon. The game increase, American Cattle Producer (515 Cooper Bldg., Denver 2, Colo.), 26(8), Jan. 1945, p. 10.

From editorial discussion of Forest Service Reports on wildlife and livestock numbers: "Game on the forests as a whole has increased three- or four-fold; domestic livestock numbers have been cut perhaps a third" [in 20 years]. "In some areas there is undoubtedly need for reduction in use, but it might be suggested that in those areas the reduction be made in game and not in domestic livestock."--Randal McCain.

Management: Farm game

Anon. Common sense in game management. Missouri Conservation Commission (Jefferson City) Circ. 135, 8 pp., 4 figs., 1945.

Production of wildlife is governed by natural laws, and to survive, the reproduction must have a suitable home. The extent of survival is controlled by carrying capacity, which in turn is determined by fertility and land use. Management can increase it, and whatever increase there may be will be taken advantage of by wildlife through its excess reproductive ability. "The wildlife conservation lesson in all this is plain. People cannot produce wildlife, only nature can do that. We can help nature only by understanding and abiding by its laws. It would do no good, for example, to raise 50,000 quail in hatcheries or twice that many and release them where several million wild-hatched birds perish every year because they cannot find adequate food, cover and water. We can increase wildlife by helping nature increase the carrying capacity--by restoring soil fertility and by wise farming and forestry practices which will provide more and better food, cover and water for wildlife and at the same time provide better living conditions for people and livestock. Nature, through her amazing power of reproduction, will stock the new wildlife homes as fast as we can provide them." These principles are illustrated mainly by references to bobwhite populations and their requirements.

Management: Farm game

English, P. F. Wildlife management with emphasis on the ringneck pheasant, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 15(11), Feb. 1945, pp. 4-5, 25, 3 photos.

The management of game species so as to produce a harvestable crop can be done profitably upon lands primarily devoted to agriculture. Management must be based upon exact knowledge of the life histories of the animals and consists in manipulating conditions so as to direct the activities and control the inter-relations of wild creatures. The author classifies wildlife from the management point of view, indicates the groups important on the farm lands of Pennsylvania, and comments upon their economic potentialities. Management is illustrated by discussion of the points that should be given special consideration in farm pheasant production. These include provision of cover to aid the seasonally shifting populations of the birds and maintenance of food supply the year round, with suggestions as to artificial feeding when necessary. An outline is given of the factors involved in a plan for managing agricultural lands for wildlife.

Management: Farm game

Kimball, James W. The development of waste areas on the farm for upland game cover, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 309-314.

Author's summary: "(1) Advancement is being made toward solving Nebraska's double problem of increasing upland game bird cover and improving farmer-sportsman relationship; (2) paid hunting has been tried and has failed in Nebraska; (3) the game management area appears to approach the solution of our double problem; (4) the game management area is from one to several sections in size. Hunting by permission of the farmer is allowed within the area; (5)

sanctuaries are fenced, planted with woody cover, and posted within the management area; (6) a current investigation is showing that the game management area plan is serving its purpose well; (7) because of war restrictions, this project is now operating on a reduced scale. However, valuable experience is being gained and a framework for a full scale, efficient postwar project is being built."

Management: Field borders

Watson, C. W. A cooperative approach to farm game management, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 304-308.

The need for a practice that constitutes good land use and at the same time benefits wildlife has led to the development of field borders of Lespedeza sericea and L. bicolor, which yield cover and food for bobwhites. Cooperation between state game departments and soil conservation districts in installing field borders is described and certain improvements are suggested. Some 2,400 miles of border strip have been completed in southeastern states.

Management: Forest wildlife

Collingwood, G. H. Functions of industry in wildlife and forest management, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 13-18.

Largely an appeal to sportsmen to cooperate in fire control. Lumbermen are interested in maintaining continuous forest production and timber cutting, both of which are favorable to wildlife.

Management: Forest wildlife

Watts, Lyle F. Some Federal functions in wildlife and forest management, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 6-12.

General statement of policies and plans of the Forest Service respecting wildlife and hunting.

Management: Fox, Red

Douglass, Donald W., and G. W. Bradt. The red fox--friend or foe?, Michigan Department of Conservation (Lansing), 23 pp., illus., 1945.

Popular bulletin discussing fox myths, food habits and economic status, the bounty system of control, cycles, and fox management in Michigan.

A condensed version appears in Michigan Conservation (Michigan Dept. of Conservation, Lansing 13), 14(5), May 1945, pp. 7-8, 1 photo.

Management: Harvest, big game

Hunter, Gilbert N. Big game kill 1944. Colorado Game and Fish Department (Denver), 15 pp., 8 figs. (processed), 1945.

Report based on hunting returns of which 66 percent, representing 85 percent of all hunters, was received. The total legal kill is estimated at 25,185 deer, 3,931 elk, and 242 bears. It is also estimated that 3,777 deer and 590 elk were shot and not harvested. The kill is analyzed by sex and age class and the localities involved are discussed and mapped. Head killed per square mile, weights, hunting intensity and success ratio also are treated and the distribution of the kill through the season calculated and graphed. A table comparing the kills for the years 1934-1944, inclusive, is presented.

Management: Harvest, deer

Fobes, Charles B. Weather and the kill of white-tailed deer in Maine, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 76-78, 1 fig., 1 table.

Of factors affecting the size of the kill, the writer believes that hunting conditions are most important and that they are controlled by the weather. From study of the seasonal kills 1939-1942, the author concludes that, "the deer kill in Maine is at a minimum during hunting seasons without snow and when temperatures and precipitation are below normal. Ideal hunting is afforded by a damp forest floor that allows the hunter to stalk his game quietly. Precipitation, either rain or snow, the direct source of all ground moisture, appears largely to determine the number of deer killed in any one season."

Management: Harvest, pheasant

Hicks, Lawrence E. The "goose" that lays the golden eggs, Ohio Wildlife Research Sta. (Ohio State University, Columbus) Release 178, 3 pp. (mimeographed), 1944.

As the pheasant is polygamous, it can maintain its populations with a low cock:hen ratio. Usually, therefore, the kill should be confined to cocks, but the fact is that hens not only "disappear" in large numbers during the hunting season but are subject to selective mortality during the mowing season. With a little care, hunters can easily spare hens and this factor in increasing the pheasant crop depends entirely upon their cooperation. This leaflet is issued with the purpose of improving pheasant hen conservation.

Management: Herd regulation

Aldous, C. M. A winter study of mule deer in Nevada, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 145-151, 1 table.

Report on the deer of a somewhat overpopulated area of the Nevada National Forest. Findings as to sex ratio, utilization of browse, nutritive value of browse, removal of deer, and herd regulation. From author's summary: "This is one of the few areas occupied by mule deer in which damage to the range was discovered in time to take remedial measures before a critical stage was reached. By such action, it was possible to bring about a proper relation between the number of deer and the proper carrying capacity of the range. Where deer and the range they occupy get out of balance because corrective management measures are not taken in time, both the deer and the range suffer heavy losses. In the area studied, instead of one acre of winter range per deer-month, there was but two-thirds of an acre available, an amount inadequate for the deer. The local yearly census should be made immediately after the snow has disappeared from the flats on the winter range and the first green grass has appeared. Sex ratio counts should be made before any bucks have shed their antlers and should be based on at least 500 animals. Measurements of twig lengths to determine utilization of browse species before the deer enter the winter range are made (usually in December) and again just after the animals leave for the summer range. Chemical analyses of twig ends of browse plants show the most nutrients in the leaves and bud ends. On ranges not overutilized, the deer selectively nip off only the tips or tender portions of stems, but on overgrazed ranges they consume practically all of the current growth and sometimes much of that of the previous year. Management practices should be based on: (a) the deer population in relation to acreage of winter range; (b) the winter and spring condition of the animals; (c) the winter sex ratio; and (d) the degree of browse utilization. The first year's removal of deer from the Duck Creek area, after being opened to hunting of both bucks and does, reduced the herd by approximately 170 animals. The present herd should be reduced to about 1,000 head. The deer on the Spring Valley side have increased to numbers far in excess of proper carrying capacity for the limited winter range and should be reduced to about 700 head."

Management: Impoundments

Cottam, Clarence. The role of impoundments in postwar planning for waterfowl, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D.C. $1.00 a copy), pp. 288-295.

Some of these will be beneficial, others injurious, to wildlife and conservationists should be alert to obtain maximum benefits from the program. Needs of the national refuge system are outlined and the necessity of cooperation among the important public agencies involved in flood control, reclamation, and other activities affecting wildlife is stressed. Problems in mosquito control and crop damage arising in connection with impoundments are mentioned. Desirable steps in the development of impoundment areas are suggested. Wildlife as a valuable, renewable, natural resource merits appropriate consideration in planning as well as in execution of the projects.

Management: Inventory, big game

Bach, Roy N. 1945 annual big game census, North Dakota Outdoors (State Game and Fish Dept., Bismarck. 5 cents a copy), 7(10), April 1945, pp. 12-13, 1 table.

Estimated number by regions of 5 species of ruminants and of the kill in 1943. The deer populations are increasing. Because of migration, antelopes evade the winter census; in the future they will be counted in August.

Management: Inventory, big game

Jackson, H. H. T. Big-game resources of the United States, 1937-1942, U. S. Dept. of the Interior, Fish and Wildlife Service, Research Report 8 (Supt. of Documents, Washington 25, D. C. 15 cents a copy), 56 pp., 31 figs., 31 tables, 1944 (Jan. 1945).

A brief history of big game estimates in the United States, and details as to the making of this series are presented. The information gathered is arranged in tables according to species (15), states, and land ownership. Trends in numbers 1937-1941 are graphed and discussed and the changes in big game, in relation to human, populations are considered and mapped. Estimated total number in 1941 was 6,748,414; the kill 640,755 (9.5 percent); and weight (hog-dressed) 71,013,640 pounds. Species in an apparently precarious condition in 1941 were the moose, bighorn sheep, and grizzly bear. Bibliography of 29 titles.

Management: Inventory, pheasant

Anon. Estimate over 16 million pheasants in South Dakota, September 1944, South Dakota Conservation Digest (State Game and Fish Dept., Pierre), Jan. 1945, pp. 7, 12, table.

The number estimated "was 44 percent more than the number of chickens in farm flocks of the State and represented an average of 34 pheasants for each 100 acres of land or 1 pheasant for every 3 acres." Three counties each had a million or more of the birds. Details by counties are given in the table.

Management: Inventory, pheasant

Einarsen, Arthur S. Quadrat inventory of pheasant trends in Oregon, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 121-131, 4 figs., 1 table.

The methods tried in the Oregon cooperative wildlife research are discussed and suggestions are made as to conduct of the quadrat system and as to testing its accuracy. Author's summary: "(1) Methods to determine trends in pheasant populations have been sought to aid in improving game bird management in Oregon. The quadrat inventory proved practical, economical, and simple, and can be used by laymen as well as game managers; (2) research on this method was begun by the Oregon Cooperative Wildlife Research Unit in 1937, after roadside counts and direct drives proved impractical because of the scarcity of roads and inadequate staffs. Careful analysis, after trial and error, has improved the plan which has been used in Oregon for several years; (3) Traffic Station maps of the Oregon Highway Commission proved the most suitable base maps, and a field record book for entering details about each quadrat was necessary; (4) experience indicates that a quadrat 1 mile long by 1/4 mile wide, in average pheasant habitat, should be selected. The observer walks the perimeter of the

quadrat and counts all birds within 100 feet on each side. Care must be taken to select the proper weather and time of day and to avoid periods when the birds may be inactive, such as the early morning, the hours between 11 a.m. and 2 p.m. on hot days, and the first wet and stormy days of autumn. The months of March and April and from August to December proved most successful in Oregon. Specific data are recorded by the field worker on cards. Total acreage then is determined by a formula: Perimeter in feet x 200 ÷ 43,560 = Acreage. Representative samples of habitat must be chosen to give a true picture of conditions; (5) ten to 30 quadrats are censused in each geographical unit, and at least one for each 20,000 habitat acres; the maximum unit should not exceed 500,000 habitat acres; (6) an ideal testing-ground was found on the 394 acres of Protection Island, Washington, where a known population has been maintained since 1937; (7) several Willamette Valley counties are seriously handicapped in managing pheasants because of the density of human population or of human interference, as shown by quadrat censuses in the autumn of 1939, 1940 and 1941. This method singled out the problem areas and served as a guide for improved game management; (8) weaknesses of the method include the time involved to cover the quadrats and the necessity for enough samples to obtain accurate results; 150 quadrats are run periodically in the Willamette Valley."

Management: Inventory, pheasant

McClure, H. Elliott. Comparison of census methods for pheasants in Nebraska, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 38-45, 5 tables.

As a result of field tests which are reported in some detail, the author concludes: "None of the methods here discussed has universal use for estimating the numbers of pheasants throughout the State under all conditions of habitat and in all months. Each is applicable to a certain set of conditions, and each has advantages over the other. The roadside count is best previous to the hunting season, if used repeatedly. The detonation method is applicable to breeding populations and for the pre-hunting tabulation. The one-minute crowing count gives best results early during the breeding season and is a fairly accurate indicator of relative population density. The scat count is of limited effectiveness, but should prove of value in areas of winter pheasant concentrations. Of the five methods under trial in Nebraska, the use of a horse and of concentrated study on a limited area x x x has a year around effectiveness and appears to be applicable to wider usage. This is in agreement with the North Dakota pheasant studies reported by Roy N. Bach."

Management: Inventory, quail

Eicher, George J., Jr. Midsummer quail survey, Arizona Wildlife and Sportsman (9 North Fifth Ave., Tucson, Ariz. 15 cents a copy), 6(5), March 1945, pp. 12-13, 1 graph.

Results of back roads auto censuses for four years (1941-44) compared and discussed. Recommendations are made as to future censuses and as to quail management. The writer is no longer available for the work but it is to be hoped that it can be continued and used as a guide to the treatment of quail in Arizona.

Management: Lespedezas

Davison, Verne E. Wildlife values of the lespedezas, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 1-9, 1 pl.

The history of introduced lespedezas is briefly noted and the value of both these and the native species to agriculture and to wildlife is discussed. Planting and harvesting also are treated. Author's summary: "Three types of lespedezas--annuals, herbaceous perennials, and shrubs--are useful in wildlife conservation, but only five or six of 150 species have proved adaptable to American use. Both annual species (Lespedeza striata and L. stipulacea) are valuable as food for bobwhites, and may be grown extensively on croplands and pastures. Of several perennial herbaceous species only sericea (L. cuneata) has been found useful. It is a poor food, but provides ground cover for bobwhites and rabbits, being particularly adaptable to the herbaceous parts of wildlife borders, between croplands and woodlands. The native species have not proved to be important for either game or land management. Of shrubby species, bicolor (L. bicolor) and a few others provide excellent food and fair shelter for bobwhites, rabbits, and possibly deer. These woody species are suitable for woodland borders, hedges, and food patches or strips, where an autumn ripening legume is needed. Establishment by direct seeding is successful and provides an economical method of growing these shrubs on wildlife land. Improved strains are being developed and further studies of usefulness to wildlife and bees are being made. All three types of lespedeza are apparently needed to make the best havens for game on farm lands and preserves. The annuals should be grown as a part of crop rotations, and both sericea and shrub lespedezas should be established on lands primarily of use for wildlife--parcels of land not used for cropland, pasture, or woodland. These practices are economically sound are are acceptable to farmers because of permanency, beauty, and multiple use." (Bibliography of 18 titles.

Management: Muskrat

Lay, Daniel W. Muskrat investigations in Texas, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 56-76, 5 figs., 7 tables.

Report on an extensive investigation of factors bearing on management and recommendations in that respect. Author's summary: "(1) On the 4,300 acre Jackson marsh, Chambers County, Texas, levee construction and other management has increased the muskrat catch from 1.5 to 5.1 pelts per acre in four years, and even more pelts could have been harvested safely during the fourth winter, 1943. Beds averaged 7.8 per acre in that winter, and were a reliable index of populations under certain conditions. A catch of 2.8 pelts per bed was made on an area of 31.6 acres with 230 beds, but 2.5 is considered a proper harvest and 2.0 a conservative figure for predicting catches from marshes where all muskrats live in beds; (2) grades on 431 pelts taken during eight half-month periods, November 16-March 15, showed a maximum percentage of Tops in January and the first half of February, and of II's in November and March. The 4-month season should be maintained because of the uncertainties of trapping weather

and bad consequences of under-trapping; (3) among these pelts, 7.2 per cent were slightly damaged and 4.4 per cent badly damaged. Of 147 cases observed in the marsh, the causes of damage were: other muskrats, 35.4 per cent; marsh hawks, 34.0 per cent; raccoons, 12.2 per cent; unknown, 18.4 per cent. To minimize damage to pelts, the trapper should set traps in as deep water as practicable, run them early each day, and reduce the numbers of marsh hawks and raccoons; (4) three age groups are described. The subadults (460 to 509 mm. in total length) are old enough to breed but not fully mature; the males have at least one testis descended and some females are pregnant. Kitts and mice are smaller and adults larger. Pelts of subadults measure 197.5 to 222.5 mm. from ear to tail square. For the moderately trapped Jackson marsh, determination of different samples by each of three methods (total measurements, pelt measurements, and inspection before skinning) gave a constant result of about 8 per cent kitts and mice, 28 per cent subadults, and 64 per cent adults. Several thousand pelt measurements on other ranches validated this ratio. Changes from this normal ratio are related to overtrapping, lack of breeding success, and integrity of the trappers; (5) measurements of 4,591 pelts in ten groups are summarized and a method described for determining age classes; (6) pregnancies occurred among adult females throughout the mild 1943 winter, being 22 per cent in November, 8 per cent in January, and 16.9 per cent in March. Breeding reaches a low level during the colder winters and perhaps in midsummer. Individuals probably breed before one year of age, some perhaps at six months; (7) the sex ratio among 1,168 muskrats examined before skinning was 59.2 males to 40.8 females, or 145 males to 100 females. The records indicate a correlation between trapping pressure and the sex ratio which introduces a possible error in most observations on sex ratio. Records of 69 kitts showed 47.8 per cent males. Among 703 muskrats grouped as to age the males were: kitts 50 per cent, subadults 53.7 per cent, and adults 62.2 per cent; (8) in a series of 99 muskrats, adult males averaged 1,069 grams and adult females 1,041.3 grams. No definite means of selecting 'adults' was used when taking these weights and the results are not entirely comparable with those of other workers; (9) predation by marsh hawks, raccoons, minks, and water moccasins, and the mortality through intra-specific strife are discussed. Certain control of predators (already commonly practiced) is approved; (10) there was marked dispersal of muskrats in late winter and spring, of value in restocking vacant habitat; (11) management of marshes includes control of water levels and of soil-water salinity, construction of levees, proper burning, elimination of cattle grazing, and some predator control; (12) management of trapping includes proper location of trappers and allotment of trapping territories, movement of traps, daily running of traps, ending trapping at the correct time, and proper care of the trappers." Bibliography of 9 titles.

Management: Muskrat

Montagnes, James. Manitoba's marshes produce again, American Forests (919 Seventeenth St., Washington 6, D. C. 35 cents a copy), 51(4), April 1945, pp. 176-177, 191, 4 photos.

Restoration of marsh lands brought a very rapid increase of muskrats. As a result of the first year (1940) of trapping, 126,000 pelts were sold; the catch increased to 191,000 in 1941, and to 300,000 in 1942. The Provincial

Government is being rapidly repaid for the expenditures made in the development and local populations are benefitting from increased income. Areas suitable for other fur animals are being improved for management. The regulations under which the projects are operated are outlined.

Management: Nest boxes

Bryan, Paul. Use of wood duck nesting boxes in Wheeler Wildlife Refuge, Alabama, Journ. Tennessee Acad. Sci. (Kendall Born, Tennessee Division of Geology, Nashville. 50 cents a copy), 20(1), Jan. 1945, pp. 35-40, 2 tables.

The area of the experiment, the construction of the boxes, and their placing and use are described. Occupancy as affected by the kind of tree in which placed and the height from the ground is tabulated and discussed. Author's conclusion: "Of 98 nesting boxes installed early in 1941 for wood duck in Wheeler Refuge, Alabama, 53 were used by gray squirrel, 9 by wood duck, 5 by flying squirrel, 4 by opossum, and 2 by screech owl. Height of the nest location apparently influenced the extent of occupancy, but no correlation was noted between distance from water, kind of tree in which nest was located, or distance from clearing." [Why not 98 nesting box?]

Management: Overpopulations, deer

Lay, Daniel W., and Henry C. Hahn. A typical deer problem, Texas Game and Fish (Walton Bldg., Austin, Texas. 10 cents a copy), 3(4), March 1945, p. 12, 1 photo.

An unbalanced sex ratio is only made worse by hunting under a buck law; authority is needed for removal of the number of does to keep the adult sex ratio at about 1:5. The need for such management is illustrated by figures on population and kill on a ranch in Mason County, Texas. The conclusions of a group of 17 deer specialists at the Ninth North American Wildlife Conference, 1944, as to overpopulations of deer are quoted.

Management: Overpopulations, deer

McKean, Wm. T. Winter deer problem, South Dakota Conservation Digest (State Game and Fish Dept., Pierre), Jan. 1945, pp. 2-3, 6, 1 chart.

In the Spearfish region, winter range is inadequate and overbrowsed and agricultural damage has resulted. Fencing of haystacks and winter feeding are remedial measures being tried. The article is mainly devoted to a discussion of the food of the deer (white-tails), the monthly make-up of which is the subject of the chart.

Management: Overpopulations, deer

Mitchell, G. E. The Murderers Creek deer herd, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 167-172.

Story of an overpopulation in Oregon, not accepted in its entirety in introductory and concluding remarks by two other individuals acquainted with the area. The area is reported as seriously overgrazed before the deer became too abundant. The animals then overused the browse and suffered high winter losses as early as 1934-35. Further damage was done by an outbreak of meadow mice. Removal of deer (including does) is tabulated for 6 seasons; this in addition to natural losses has reduced the herd to a satisfactory level but the carrying capacity of the range is only 20 percent of what it was in 1932. The author concludes that: overpopulations become serious before conditions are fully appreciated; public opinion is not a good guide to game management; when the starvation stage is reached, there is little possibility of saving the herd on natural forage; corrective management is usually too little and too late.

Management: Overpopulations, elk

Murie, Olaus J. Our big game in winter, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 173-176.

Summary of experience with the Jackson Hole, Wyoming, elk herd, finally reduced by disease and by hunting to a number somewhere near the carrying capacity of the range, which, however, has been lowered to about a fourth of what it was in 1934. The author says: "In closing, I would stress what I consider at least three obstacles to our properly providing for our big game in winter: (1) Too much reliance on feeding of hay as a solution, rather than herd reduction to range capacity. Hay feeding concentrates the animals and is the surest way to destroy the browse of a range where it is practiced; (2) lack of realization that available lands for winter use by game are rapidly going into other uses. In many cases it is already too late to adequately provide for our game herds; (3); the tendency to give all our attention to jurisdictional matters, method of harvesting, predation, poaching, open and closed season, to such an extent that our attention is diverted from the real issue today, which is adequate winter range."

Management: Pheasant

Bach, Roy N. Feeding our pheasants, North Dakota Outdoors (Game and Fish Dept., Bismarck. 5 cents a copy), 7(9), March 1945, p. 5.

The pheasant population of North Dakota, varying from 6-9 millions at the end of the hatching period to 2-3 millions at the beginning of the following hatching season, thus averaging about 4 million birds per month, requires about 2 million pounds of food per day, equivalent to 25 large box-car loads. If only a third of the total is grain, it is worth, at waste-feed prices, well over half a million dollars per year. Aside from cost, however, the artificial feeding of North Dakota pheasants is impracticable because the food cannot be adequately distributed. The birds are fed largely because of, and through, the agricultural economy of the State, the contribution of the average farm unit to pheasant upkeep being from $10 to $15 annually. So far as winter feeding is practicable at all, it is through areas of waste land with their natural

growths. Twice as much of that type of environment is needed as is now available. Feeding North Dakota pheasants is big business.

Management: Pheasant

Bishop, James S. Pheasant mortality and nesting success, Connecticut Board of Fisheries and Game (Hartford), 46 pp., 11 photos, 6 graphs, 10 tables, 1944.

Aimed to test the effectiveness of present stocking and to seek improvements in the program, this study was confined to a small area and carried on as intensively as overturn of personnel through military exigencies permitted. One object was to keep track of individual birds; this required markings recognizable in the field; the methods used are described and illustrated. The results are discussed under the headings of mortality, production, and hunting effort and return. The conclusions are thoroughly discussed. Three general findings announced are: "First, the population is ever changing, being built up by release and production, and depleted by predation, accidents, and hunting. Second, the most effective increase in population is by natural production, the most significant loss is during the hunting season. Third, the winter months except possibly during abnormally severe winters are by far the least hazardous period of the year for pheasants, losses being small." Management suggestions are made, one of which is noted in the following paragraph: "The hunting season and the month of maximum spring mortality so seriously affect the hen pheasant population that, if these losses could be eliminated, a 50% increase in cocks bagged could accrue. A suggested management method which should reduce these losses, and some others, is the establishment of numbrous, relatively small (10-40 acres) refuges."

Management: Pheasant

Einarsen, Arthur S. Some factors affecting ring-necked pheasant population density, Murrelet (Pacific Northwest Bird and Mammal Society, Washington State Museum, Univ. of Washington, Seattle 5. 70 cents a copy), 26(1), Jan.-April 1945, pp. 2-9, 1 map, 3 tables.

Introduction of pheasants to Protection Island, where there were no upland game birds at the time, permitted study of their increase under very favorable conditions. The numbers grew from 2 to 470 per 100 acres in the period 1937-42; allowing for unfavorable environment, the population was approximately 940 per 100 acres of actually occupied land. The rate of increase diminished through the years. Man is the most important limiting factor in the region, and in the Willamette Valley a two-year closed season permitted increase from 1.3 to 25 pheasants per 100 acres. On Protection Island, free from hunting, the annual average mortality was 8.39 percent. The causes are tabulated (hawks most important) but "The pheasant increase was sufficiently high to convince research workers that predation alone was a minor limiting factor." Beyond a certain level, pheasant populations are objectionable as causing crop damage. Natural reproduction is far more effective than artificial restoration. A tabulation gives the frequency of occurrence of plant foods according to the results of analyses of feces, 1939-40.

Management: Raccoon

Butterfield, Robert T. Populations, hunting pressure, and movement of Ohio raccoons, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 337-343, 3 figs.

Author's conclusions: "(1) Raccoon populations on selected areas of Ohio ranged from 1 raccoon per 11.7 acres to 1 raccoon per 106 acres as revealed by live-trapping, and seems to vary depending upon the habitat and the hunting pressure; (2) the yearly kill during the 1943-44 hunting season of 26 tagged raccoons of a possible 135, or 19.2 per cent, appears to be below the number possible to be killed and yet leave a suitable brood stock for following years; (3) raccoon range in the hill country of Ohio appears to be confined to watersheds, and ridges may constitute a physical barrier; (4) there appears to be no movement of raccoons from their original range according to retrapping and kill records, yet a large percentage of tagged raccoons have been unaccounted for to date; (5) natural tree dens in Ohio are supplemented by the extensive use of ground dens by raccoons. Whether raccoons use these ground dens for brood dens is a matter of question."

Management: Range

Taylor, Walter P., and Helmut K. Buechner. Relationship of game and livestock to range vegetation in Kerr County, Texas, The Cattleman (1109 Burk Burnett Bldg., Fort Worth, Texas), 29(10), March 1943, pp. 83-86. 81,

Extended studies under an Experiment Station project in the Edwards Plateau country of Texas permitted the outlining of the following stages of range vegetation: climax, perennial tall grass, perennial short grass, weed grass, unpalatable weed stage, and bare ground, vegetation scarce or absent. A deer will remove more forage from the range than a goat and six deer will consume as much feed as one cow, although it will be of a different composition. It is pointed out that the numbers of deer should be estimated and that required adjustments in numbers of the various classes of domestic livestock and of deer should be made in the light of local conditions. Not more than 50 animal units (one 750-pound cow is the animal unit here used) per section of grazing land in this region are recommended.

Management: range

Warner, S. R. Soils, vegetation, and ecological succession in Walker County, Texas, as related to wildlife, Proc. and Trans. of the Texas Academy of Science (. S. W. Bilsing, A. & M. College of Texas, College Station. $2.00 a copy), 26, 1942 (194), pp. 83-97.

There are four principal vegetational types in Walker County, Texas, namely: (1) pine woodland, (2) post oak woodland, (3) blackland prairie, (4) bottomland hardwoods. At present the greater part of the county is an overgrazed open range used year long. Limited grazing seems desirable at certain seasons, to keep down fire hazards from tall grasses. Burning has had both

advantages and disadvantages to wildlife. In order to be beneficial, burning should be done in late fall and early winter after fall rains, but before the germination of winter legumes, and then only on limited areas.

Management: Range

Taylor, Walter P. The wild turkey in Texas, Proc. and Trans. of the Texas Academy of Science (S. W. Bilsing, A. and M. College of Texas, College Station. $2.00 a copy), 27, 1943 (1944), pp. 231-232.

A preliminary report on an Experiment Station project, giving attention to the problem of maintaining the wild turkey in suitable numbers on the Edwards Plateau of Texas. The most promising means of helping to stabilize the wild turkey population is better regulation of the range and improved adjustment of grazing animals to it so that a greater quantity of food will remain for livestock and incidentally for the various game species, including the wild turkey.

Management: Range appraisal

Smith, Arthur D. A study of the reliability of range vegetation estimates, Ecology (Prince and Lemon Sts., Lancaster, Pa. $1.50 a copy), 25(4), Oct. 1944, pp. 441-443, 7 tables.

Estimates by trained men varied greatly; the studies do not show density estimates to be a highly reliable measure of range values. "The results of this study support the current tendency among range technicians to rely less upon density estimation as a means of determining grazing capacity of ranges, and more upon comparison with ranges of known productivity and a general ecological analysis of plants and soil followed by percentage adjustments in current stocking." Bibliography of 7 titles.

Management: Refuges

Elmer, Arthur C. Waterfowl refuge administration in wartime, Trans. N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 272-275.

The author considers: Reduction of personnel and adjustments thus made necessary; increase in economic uses of the refuges; control of agricultural losses brought about by the increased number of waterfowl; and predator control needed to protect wildlife on the refuges.

Management: Refuges

Gordon, Seth. The game refuge system in Pennsylvania, Maryland Conservationist (514 Munsey Bldg., Baltimore 2, Md.), 21(3), 1944, pp. 4-8, 7 photos.

History of the program from 1905 when the first refuge was established to May 31, 1944 when the system included 209 primary State Game Refuges, 84

reservations in State forest lands, 52 auxiliary refuges on privately-owned lands, and 73 cooperative farm-game units. Their management also is discussed. In all, at the date mentioned, the Pennsylvania Game Commission had under complete or partial control, 1,033,287 acres, of which 825,225 were open to public hunting. Perhaps the title of the article should have read "public shooting grounds" system.

Management: Soil conservation in relation to wildlife

Davis, Cecil. Soil conservation helps game in Callaway County, Missouri Conservationist (Missouri Conservation Commission, Jefferson City), 5(12), Dec. 1944, pp. 4-5, 3 photos.

Soil conservation practices applied to a demonstration area are outlined. "Following this first year of development work, another wildlife census was made, in February, 1939. The results of this count were extremely gratifying: In addition to the 32 per cent increase in coveys of quail, squirrels had increased in number from 10 to 42, rabbits from 157 to 689, and ground dens of furbearers had increased 100 per cent. Wildlife that had not been found in the first census at all included 89 ducks, flushed from the new ponds, and five prairie chickens. It is natural to wonder how much of this increase in wildlife was due to the state-wide recovery from the drouth which ended in 1936. Undoubtedly some should be attributed to this. But it is significant that in no other area except this one, where land improvement work was done, have comparable figures been shown. What actually happened was that the program, while aimed primarily at the conservation of soil and water and the improvement of land use, had resulted in the development of brand-new areas of winter and summer cover for quail and rabbits. The twelve new ponds built to conserve water, prevent erosion, and furnish drinking places for livestock, had been made use of by upland game, furbearers, and waterfowl. Existing food and cover-producing plots had been improved for wildlife through protection from grazing and fire, which had as its main objective the protection of the soil itself."

Management: Squirrel, Fox

Allen, Durward L. Michigan fox squirrel management (Game Division, State Dept. of Conservation, Lansing), 404 pp., 151 figs., numerous cartoons, 12 tables, imprinted Oct. 1943 but received Jan. 1945.

Management has great possibilities because of the high reproductive potential of many species of which the fox squirrel is a medium exemplar. In so far as it identifies the limiting factors in each case and arranges to counteract them, management will succeed. This study to guide effective management is reported upon along the following lines: "An interpretation of historical changes; an inventory of present range conditions and the squirrel harvest now being produced; a study of the fox squirrel's habits and life requirements; formulation of what constitutes ideal conditions for this species; determination of how this ideal can best be approached on different land types; and management program for this species in Michigan." These objectives are thoroughly realized in a book that appears to be the best that has yet been published on the management of a single species of mammal. The volume

contains also much information on the gray squirrel. It is amply, interestingly, and to some extent artistically, illustrated and is an all around excellent production. Bibliography of 115 titles.

The abstracter likes also the following remarks in the foreword by H. D. Ruhl: "And many of the people interested in birds, animals, trees, and flowers utilize them as the indispensable setting for hiking, camping, picnicking, boating, riding, gathering nuts, and similar pursuits. Probably the truth is that these activities, upon which there is no closed season, represent the greatest value of all. Certainly they must be considered."

Management: Stocking bobwhite

Anon. Why Texas doesn't pen-raise quail, Texas Game and Fish (Walton Bldg., Austin, Texas. 10 cents a copy), 3(3), Feb. 1945, pp. 6, 16.

Investigations of two quail farms in Oklahoma revealed low survival of released birds and a consequent high cost of those brought to bag. Details are given. Introduction of Mexican bobwhites also failed to increase local quail populations in 85 percent of the releases. "To summarize our conclusions as to why the State of Texas should refrain from establishing a quail hatchery," the writer says: "(1) There is no evidence that such an enterprise would be economically sound; (2) there is no evidence that such a plant would supply information that is not already available since some of the other States, ammunition manufacturers, and private individuals are carrying forward their experiments to determine the practicability of this kind of work; (3) all evidence points to the fact that a quail hatchery or a series of them would not increase the number of quail to be hunted by the sportsmen of Texas; (4) more quail can be produced for the hunter's gun if the money is spent for education and encouragement of better land use practices that will improve the quail environment, and for experimental work to learn what specific quail management techniques can be applied to Texas conditions and Texas wild quail population." Abstract of a previous article on this subject appeared in WILDLIFE REVIEW No. 36, March 1943, p. 42.

Management: Strip-mine areas

Holmes, Leslie A. Reclaiming stripped lands in Illinois, Scientific Monthly (Science Press, Lancaster, Pa. 50 cents a copy), 59(6), Dec. 1944, pp. 414-420, 7 figs. (photos).

Deals mainly with use of the areas for forestation and pasturing. The section on recreational use, however, includes the following passage relating to wildlife: "Game of all kinds, particularly fur bearers, are found in abundance in the rough terrain of the spoil banks. From the pasture land described above, muskrat pelts valued at $250 and four mink pelts worth $32 were taken and sold in 1943. Trapping has been exceptionally lucrative on all of the Illinois spoil banks. Quail and pheasants are raised and liberated by some of the companies in co-operation with the State Department of Conservation. Two-thirds of the birds are released locally in areas other than mine dumps, and the remaining third are liberated on and near the mine dumps where protection

is greater than in the adjacent areas. Wild ducks commonly use the lakes in their migratory flights; and duck hunting in these surroundings has been reported as unusually good. In all, about 12 per cent of the strip mine dumps in Illinois are now in recreational areas." From author's conclusion: "By turning the spoil banks into forest, pasture, recreational areas, and game preserves, all of them may be used to advantage, and many will return a yearly profit to the owner equally as great as that produced by the land prior to mining."

Management: Swan, Trumpeter

Delacour, Jean. The fate of the trumpeter swan, Avicultural Magazine (86 Regent's Park Road, London, N.W. 1, England. 5 shillings a copy), Ser. 5, 9(6), Nov.-Dec. 1944, pp. 127-132, 1 pl.

Discussion of its relationships, range, and survivors, and statement of plans for perpetuating the species. The author, an aviculturist, knowing of breeding of trumpeters in captivity in Europe, recommended the transfer of cygnets to suitable new areas where it is hoped their descendants will establish additional colonies. The wild swans at the Red Rock Lakes Refuge in Montana made a satisfactory increase since the last census, while the Yellowstone Park flock merely held its own.

Management: Transplanting deer

Wood, Roy. Arkansas' deer transplanting program, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 162-167, 1 fig., 2 tables.

The State's deer population is less than 10 percent of the number that can be carried by present range. The turning point in depletion came with the establishment of the first Federal big game refuge in 1927. Today there are 27 refuges comprising more than 700,000 acres. Stocking these areas has involved importation of deer from Wisconsin and transplanting from well-stocked areas within the State. These are described as are also the methods used in trapping and transporting the animals. Costs ranged from $14 to $32 per animal released in good condition. The results are tabulated, the trap used is illustrated, and a bill of materials for it is presented.

Management: Trapping birds

Kutz, H. L. An improved game bird trap, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(1), Jan. 1945, pp. 35-38, 1 pl.

Discussion of game bird trapping and references to 7 papers on the subject. The use of electrically-welded, wire fabric cuts down injuries to trapped birds and a skirt of poultry netting entirely around the trap except at the entrance funnel protects them from predators. The trap is described and illustrated and a bill of materials required for its construction is presented. "The important advantages of the New York trap are its light weight, ready

portability, the ease and speed with which it can be set up and taken down, its cheap and rugged construction, the high degree of freedom from injury and mortality which it offers to trapped birds, and its successful operation on both ducks and pheasants."

Management: Upland game birds

Bach, Roy N. Major aspects of upland game management, North Dakota Outdoors (State Game and Fish Dept., Bismarck), 7(6), Dec. 1944, pp. 3-4.

Emphasizing the short life and great natural turnover in upland game bird populations, the author rightly claims that the most promising means of improving survival is in attempting to save more of the young birds, among which mortality is highest. He compares the objectives and methods of the wildlife manager and the poultryman. The main difference in management is the poultryman's greater control of mortality. [But this is due largely to housing and to confining the stock to the immediate vicinity of the homestead--measures that can hardly be imitated in the wild.]

Management: Upland game birds

Steen, Melvin O. The significance of population turnover in upland game management, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 331-335.

Author's conclusions: "(1) Population turnover is high and constant in upland game; (2) annual carryover is limited to the winter capacity of the range and prevailing efforts to increase carryover are quite generally difficult, costly and largely ineffective; (3) the harvestable surplus is determined by the degree of reproduction success attained each year, and practical management should strive to increase reproduction success to the greatest attainable level; (4) the game administrator is concerned, above all things, with hunter reaction, and the hunter on the average range considers the hunting to be good in a season following high reproduction success, and to be poor in a season following low reproduction success; (5) the key to practical management is the bird of the year, and census techniques and management practices should be modified accordingly; (6) there is need for gathering all possible information on reproduction and reproduction mortalities, and investigational work should be adjusted to meet this need; (7) the prevailing concept of upland game bird management overrates the importance of the mature bird and adult survival and underrates the importance of the immature bird and juvenile survival; (8) the most effective and practical management of upland game will not be attained until the prevailing concept of management is reversed."

Management: Wildlife on Indian reservation

Krefting, Laurits, and Alton Bramer. Wildlife conservation at Grand Portage. Indians at work. (U. S. Dept. of the Interior, Office of Indian Affairs, Chicago 54, Ill.), 12(3), Sept.-Oct. 1944, pp. 19-21, 4 photos.

Notes on the history of Grand Portage (Minnesota) and of the Indian Reservation there. To protect dwindling wildlife, a code of game ordinances was adopted in 1943 and trapping and transplanting of beavers were begun. Plans for other work and for wildlife management and utilization also are discussed.

Management: Winter feeding

Carhart, Arthur H. Killing deer by kindness, American Forests (919 Seventeenth St., Washington 6, D. C. 35 cents a copy), 51(1), Jan. 1945, pp. 13-15, 40, 5 photos.

Results of winter feeding in Colorado. When the animals had to depend principally upon the stock feeds supplied them, mortality was high (almost a third), the fawns succumbing in the highest proportion. "By positive and actual tally, 1,365 deer were lost at the areas where winter feed was furnished; on the other range, where deer rustled their own browse feeds, only three carcasses were located." Apples and peach-tree trimmings added to the hay greatly reduced losses. Dry alfalfa hay scratches the lining of the mouth and gullet which becomes infected; this kills many animals. Results in other regions confirm the Colorado findings. "The feeding of deer, except in the most extreme and critical periods, and then only for a short time, is costly, unsound, and actually destructive." Suggestions are made as to management to keep herds in better balance with the natural food supply.

Natural History: Aleutian Islands

Collins, Henry B., Jr., Austin H. Clark, and Egbert H. Walker. The Aleutian Islands: Their people and natural history. Smithsonian Institution (Washington, D. C.), iv+131 pp., 21 pls., 8 figs., 1 folded map, 1945.

The Islands and their people are written of by Collins; the animal life by Clark; and the plants by Walker. Besides narrative text, there are lists of, and keys to, the mammals, birds, and plants. An authoritative, well-made, and attractively illustrated publication.

Natural History: Amphiuma

Baker, C. L. The natural history and morphology of Amphiumae, Journ. Tennessee Acad. Sci. (Kendall Born, Tennessee Division of Geology, Nashville. 50 cents a copy), 20(1), Jan. 1945, pp. 55-91, 13 figs.

The best account to date of these interesting amphibians, presenting original and compiled information on taxonomy, distribution, natural history, and anatomy, with speculations on phylogeny and suggestions for further investigations. 2-1/2-page bibliography.

Natural History: Bats of Texas

Davis, Wm. B. Texas bats, Texas Game and Fish (Walton Bldg., Austin, Texas. 10 cents a copy), 3(2), Jan. 1945, pp. 4-5, 12-13, 5 photos.

Notes on some of the superstitions relating to bats; general remarks on their structure, senses, habits, and economic value; briefly annotated list of 19 species known to occur in Texas.

Natural History: Bird nests

Stevenson, Elmo. Key to the nests of Pacific Coast birds. Oregon State College, Studies in Zoology, 4 (Office of Publications, Corvallis, Oreg. 50 cents a copy), 71 pp., 32 pls., 1 fig., 1942.

Value of the study of bird nests, suggestions for finding and preserving them; keys and illustrations.

Natural History: Birds of Georgia

Authors. Birds of Georgia. A preliminary Check-List and Bibliography of Georgia Ornithology. (University of Georgia Press, Athens. $2.00 a copy), 111 pp., frontispiece, map, 1945.

This publication has been compiled by Earle R. Greene, William W. Griffin, Eugene P. Odum, Herbert L. Stoddard, and Ivan R. Tomkins, and has an interesting historical account of Georgia ornithologists and their work by Eugene E. Murphey. The Check-List summarizes the status of all forms known or reported from the State. The bibliography of 32 pages includes titles through 1943. Appendixes list Georgia bird clubs and their officers and the principal recent local lists of Georgia birds. The State extends from mountains (several over 4,000 feet) to tide-marshes and coastal islands; the ecological features of these regions are briefly indicated in an explanation of the map. Economic limitations had to be observed but within these, the result is an evident labor of love, well done.

Natural History: Mammals of New Hampshire

Carpenter, Ralph G., 2nd, and Hilbert R. Siegler. A list of New Hampshire mammals and their distribution, New Hampshire Fish and Game Dept. (Concord), 11 pp. (processed), 1945.

A briefly annotated check-list of 61 species and subspecies.

Natural History: Reptiles of Indiana

Minton, Sherman, Jr. Introduction to the study of the reptiles of Indiana, American Midland Naturalist (Notre Dame, Ind. $1.00 a copy), 32(2), Sept. 1944, pp. 438-477.

Annotated list of species, the first since 1892.

Predation

Cartwright, B. W. The "crash" decline in sharp-tailed grouse and Hungarian partridge in western Canada and the role of the predator, Trans. Ninth N. A. Wildlife Conference 1944 (American Wildlife Institute, Investment Bldg., Washington 5, D. C. $1.00 a copy), pp. 324-329, 2 maps, 1 table.

In southern Manitoba and southeastern Saskatchewan in 1942, there was a general and great decline in number of the game birds mentioned, which was attributed by most observers to cold, wet weather in the season for rearing the young. Successive years of failure would be disastrous to such short-lived species. When the first nesting is abortive, however, these birds persist in renesting until most of them succeed in rearing a brood. Hence, destructive factors, including predation, to the extent that they destroy early broods, bring about a lengthening of the breeding season that tends to prevent extirpation. But the predators themselves may destroy too great a proportion of the broods so that reasonable control seems the best policy. As applied to waterfowl, predation on early broods does not have the same effect where environmental conditions are unfavorable to the success of later nestings. Control of the chief predators on their eggs is, therefore, deemed desirable. Bibliography of 11 titles.

Propagation: Bobwhite

LeCompte, E. Lee. Maryland leads country in "winter" propagation of bob-whites, Modern Game Breeding and Hunting Club News (J. A. Gardy Printing Co., 28 N. State St., Doylestown, Pa. 25 cents a copy), 14(12), Dec. 1944, pp. 4-5, 9 figs.

Birds hatched in August and September and kept in brooders laid eggs freely. The eggs when incubated gave good percentages of hatch and survival. Some eggs held for 3 months yielded a hatch of 67.5 percent. Winter propagation is considered to have several advantages and to be worthy of more extended trial.

Propagation: Feeding bobwhites

Nestler, Ralph B. Corn substitutes in the diet of bobwhite chicks, Feedstuffs (Miller Publishing Co., Minneapolis, Minn. 10 cents a copy), 16(30), July 22, 1944, pp. 17-22, 4 tables.

In order to make suggestions as to substitutes for corn more useful during the war for other purposes than feed, experiments with a number of cereals, singly and in combination, were made at the Patuxent Research Refuge of the Fish and Wildlife Service. Author's summary: "Of nine cereals used in the diet of growing quail, millet consistently gave the best results considering survival, bird-weights, feed consumption, and efficiency of feed utilization. Millet, kafir, and buckwheat when fed as sole cereals gave results comparable to those obtained with yellow corn. Results on oats and rye as sole cereals were not very satisfactory. When quail chicks were given a choice of mashes based on the cereals under consideration, they showed the greatest

preference for the one containing millet as sole cereal, and the least desire for that containing oat groats. However, none of the preferences was outstanding. Any of the cereals successfully replaced half of the corn in the diet, millet, wheat, and rye being the leading three. When substituting for yellow corn, one should bear in mind that yellow corn is a fair source of carotene (Provitamin A), whereas all of the other cereals mentioned herein are poor sources. Therefore, sufficient vitamin A or carotene should be supplied by means of other feedstuffs in order to prevent a deficiency of this important nutrient."

Propagation: Feeding bobwhites

Nestler, Ralph B., W. W. Bailey, A. C. Martin, and H. E. McClure. Value of wild feedstuffs for pen-reared bobwhite quail in winter, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 115-120, 3 tables.

Authors' summary: "(1) During the winters of 1939-40 and 1940-41, two experiments involving 456 bobwhite quail, were conducted at the Patuxent Research Refuge, Bowie, Maryland, to determine the palatability and comparative feeding value of 20 common wild quail-foods when offered as a part of a maintenance diet; (2) mortality was low on all diets, the highest occurring on that containing a mixture of bayberry and wax myrtle fruits. On all diets the birds showed increases in weight during the early winter. These gains were better maintained by birds on the wild foods than those on control diets composed entirely of cultivated feedstuffs; (3) there were statistically significant differences between the quantities of the various diets eaten; (4) for palatability and acceptability, seeds of common ragweed (Ambrosia artemisiifolia) and of shrub lespedeza (Lespedeza bicolor) were the preferred wild foods; (5) it is concluded that pen-reared bobwhite quail can be maintained successfully through winters in the vicinity of Washington, D. C., on diets containing 50 per cent of any one of the wild foods listed and 50 per cent of a high-caloric commercial seed mixture with yellow corn as the principal cereal; (6) the results of these 'cafeteria' studies, although interesting and indicative of the preferences of quail in confinement, do not necessarily represent selections that might be made by bobwhites in the wild."

Propagation: Feeding bobwhites

Nestler, Ralph B., and Leonard M. Llewellyn. Abnormal feathering of pen-reared bobwhites, Poultry Science (450 Ahnaip St., Menasha, Wis. 75 cents a copy), 23(1), Jan. 1944, pp. 72-75, 2 figs., 3 tables.

Authors' summary: "Two experiments were conducted with 944 pen-reared Bobwhite quail chicks to determine the optimum level of dried milk products in a diet in which no other animal protein concentrate was included. An abnormal juvenal feather growth, in which primary and secondary wing feathers were curved, twisted, stunted, and, in some cases, frizzled, occurred among many of the birds. It was most prevalent on the diet containing no dried milk products. The incidence diminished as the percentage of milk products in the diet was increased, but appeared in a few birds even on the diet containing 15 percent

dried buttermilk and 5 percent dried whey. A deficiency of riboflavin (vitamin G) apparently is the major, but not sole, cause of the abnormality. The incidence of the malformation was also consistently and significantly greater among the birds receiving vitamin A and D feeding oil fortified, than among those receiving D-activated animal sterol."

Propagation: Feeding bobwhites

Stadelman, W. J., E. W. Callenbach, R. R. Murphy, and R. V. Boucher. Rations for bobwhite quail, Pennsylvania Game News (Pennsylvania Game Commission, Harrisburg. 10 cents a copy), 15(11), Feb. 1945, pp. 10-11, 28-30, 4 photos, 6 tables.

Large-scale propagation of game birds brings problems that can be solved only by research, a very important one of which is feeding. The authors review certain publications on the subject (8 titles cited), describe their own experimental procedure, and present and discuss the results. The composition of 22 different mashes fed, chemical analyses as to their nutritional elements, and results in feed acceptance, weights, and mortality of the experimental chicks, are tabulated. The most satisfactory mash had a protein content of 30 percent.

Propagation: Inbreeding

Nestler, Ralph B., and Arnold L. Nelson. Inbreeding among pen-reared quail, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(2), April 1945, pp. 217-222, 3 tables.

The authors review literature indicating that inbreeding is probably of little consequence among existing populations of the bobwhite, report their findings of a loss of reproductive efficiency in closely inbred, pen-reared birds, and suggest that inbreeding may be a factor in preventing the recovery of wild bird populations reduced to very small numbers.

Propagation: Vices, picking

Nestler, Ralph B., Don R. Coburn, and Harry W. Titus. Picking among pen-reared bobwhite quail, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 105-115, 2 tables.

"Toe-picking and beak-picking x x x may start several days after the chicks hatch; usually it is most severe during the first two weeks but may appear at any age. Mortality from picking up to 45 per cent has been reported among young quail." Experiments in control of the vice are here reported and the literature of the subject (17 titles cited) is reviewed. Authors' summary: "During five years (1939-43) of nutritional research on pen-reared bobwhite quail at the Patuxent Research Refuge, Bowie, Maryland, observations on picking among birds of all ages showed the following results: (1) Picking occurred on all grains tested: corn, wheat, oats, oat groats, barley, millet, buckwheat, kaffir, and mixtures of cereals. The lowest incidence was with buckwheat as

the sole grain in a growing diet; (2) picking occurred on all levels of fiber from one to 11 per cent in a growing diet; (3) picking occurred on various grinds of corn, barley, and oats, but was least when these cereals were ground in a hammer mill with 3/32 inch mesh screen; (4) the incidence was as high on diets containing animal protein as on those containing no animal protein; (5) after picking began, the addition of one or two per cent of salt to the diet for several days was effective, in many instances, in checking the disorder. Results at the Refuge and the answers to questionnaires from 222 private propagators of gamebirds showed that in two-thirds of the cases, treatment with an increased quantity of salt successfully stopped the trouble. As a preventative, however, salt was of little value. Picking occurred on both low and high levels of salt; (6) supplementing the regular diet with certain feed concentrates such as fish meal, soybean oil meal, liver meal, or chopped greens offered in a separate feeder for a day or two, was as efficacious as the addition of salt; (7) more picking occurred among quail chicks on a 22 per cent level of protein than on higher levels; (8) there was less picking on diets relished by the birds than on those seemingly unpalatable; (9) there was no correlation between the amount of floor space per chick and the incidence of picking; (10) increasing the feeding and drinking space seemed to have a marked beneficial effect; (11) some adult birds on wire floors resorted to self-picking of their feet after the toes were frost-bitten."

Research: Activity recording

Morris, R. F. A simple activity cage for small mammals, Acadian Naturalist (Natural History Soc., University of New Brunswick, Fredericton, N. B.), 1(4), Nov. 1944, pp. 153-156, 1 fig.

For use with record on a revolving drum, sample of which is illustrated; description, mode of suspension, and care; brief account of some of the results obtained.

Research: Age determination

Linduska, Joseph P. Age determination in the ring-necked pheasant, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 152-154.

Author's summary: "During 1940 to 1943, over 700 male ring-necked pheasants were harvested from the controlled hunting area at Rose Lake, Michigan, and were examined in the station laboratory. Over 1300 others were given cursory examination at conservation officers' road blockades and 300 live individuals (live-trapped or on game farms) were examined. These studies showed that: (1) probing the bursa from without is a practical and reliable method for distinguishing adults from young of the year, in either living or dead individuals, until as late as December; (2) the 'strength of lower mandible test' is an objective method of high accuracy useful in conjunction with spur examinations to determine the age of practically all autumn cocks, and this combination, because of simplicity and speed, probably will be most useful in age analysis of shot birds on controlled hunting areas and in other situations where rapid determination is necessary; and (3) plumage differences

between adults and young cock pheasants provide means for distinguishing a few autumn individuals, but too few of the young retain sufficient juvenile plumage into that season for the character to be of any consequence when used alone."

Research: Age determination

Petrides, George A. First-winter plumages in the Galliformes, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(2), April 1945, pp. 223-227, 1 table.

Author's summary: "In native and naturalized American gallinaceous game birds, it was found that, during the first winter, native quails retain the two outer juvenal primaries and the entire series of greater primary coverts; turkeys keep their distal primaries but no coverts. All grouse and the introduced Hungarian and Chukar partridges retain the outer two flight feathers of the wing and their coverts, but the imported Ring-necked Pheasant sheds and replaces all primaries and all coverts. It was particularly noted that the pheasants and European quails, which have been placed in the same subfamily in recent revisions of the Galliformes, undergo radically different types of post-juvenal molts. Limited notes on the post-juvenal molt in other Galliformes are given and variation in the outermost greater primary covert is described." Bibliography of 13 titles.

Research: Care of marmal specimens

Booth, Ernest S. Temporary preservation of small mammals in the field, Journ. Mammalogy (Ernst T. Hooper, University of Michigan, Ann Arbor. $1.00 a copy), 25(4), Nov. 1944, pp. 354-358.

Review of literature (8 titles cited) and author's suggestions for temporarily embalming specimens to be made up into museum skins later.

Research: Hair identification

Koonz, C. H., and E. J. Strandine. A rapid and simplified method for revealing the surface pattern of hair, Trans. Amer. Microscopical Society (James E. Ackert, State College, Manhattan, Kans.), 64(1), Jan. 1945, pp. 63-64, 1 fig.

By staining with water soluble nigrosin; this gives a relief picture of the sculpturing.

Research: Plant identification

Eyles, Don E., and J. Lynne Robertson, Jr. A guide and key to the aquatic plants of the Southeastern United States, Public Health Bul. 286 (Supt. of Documents, Washington 25, D. C. 25 cents a copy), iv+151 pp., illus., 1944.

This bulletin is for the identification of fresh-water plants with which mosquito breeding is associated. It includes (abundantly illustrated) a glossary and keys to genera, and in most of these, to species, and in addition brief remarks on the ecological and geographical distribution of the plants. Bibliography of 7 titles. The publication should be of much practical value.

Research: Restraining tube

Hummon, O. J. A device for the restraint of mink during certain experimental procedure, Journ. Amer. Veterinary Medical Assoc. (600 S. Michigan Ave., Chicago, Ill. 75 cents a copy), 106(815), Feb. 1945, pp. 104-105, 2 photos.

Description and illustrations.

Research: Soil conservation in relation to wildlife

Graham, Edward H. Frontiers in land use biology, Soil Conservation (Supt. of Documents, Washington 25, D. C. 10 cents a copy), 10(9), March 1945, pp. 193-197, 3 photos.

Soil conservation measures affect wildlife but in what ways and to what extent are not yet fully understood. The author suggests lines of research in connection with: farm fish ponds; muskrat marshes; streamside ecology; management of hedges, field borders, and spoil banks; insect, rodent, and weed problems; and the effects of erosion on plant and animal communities.

Research: Trapping

Soper, J. Dewey. On the winter trapping of small mammals, Journ. Mammalogy (Emmet T. Hooper, University of Michigan, Ann Arbor. $1.00 a copy), 25(4), Nov. 1944, pp. 344-353, 5 figs.

Illustrated suggestions as to effective methods of trapping when the ground is covered with snow.

Research: Trapping hawks and owls

Stewart, Robert E., James B. Cope, and Chandler S. Robbins. Live trapping of hawks and owls, Journ. Wildlife Management (P. F. English, 206 Forestry Bldg., State College, Pa. $1.00 a copy), 9(2), April 1945, pp. 99-104, 1 pl., 1 fig., 3 tables.

Report on tests at the Patuxent Research Refuge, Md., with 4 types of traps. Authors' summary: "(1) Hawks of six species (80 individuals) and owls of five species (37 individuals) were trapped for banding from November 1, 1943, to May 26, 1944; (2) in general, pole traps proved better than hand-operated traps or automatic traps using live bait; (3) Verbail pole traps proved very efficient, and were much more humane than padded steel traps because they rarely injured a captured bird; (4) unbaited Verbail traps took a variety of raptors,

in rough proportion to their local abundance, although slightly more of beneficial species were caught than of harmful types; (5) hawks and owls were retrapped more readily in Verbail traps than in other types tried; (6) the number of song birds caught in Verbail traps was negligible; (7) crows and vultures were not taken in Verbail traps, but possibly could be caught with bait."

Speed: Coyote

Cottam, Clarence. Speed and endurance of the coyote, Journ. Mammalogy (William H. Burt, University of Michigan, Ann Arbor. $1.00 a copy), 26(1), Feb. 1945, p. 94.

Instance of a 35 mph gait.

Speed of flight: Old-squaw

Speirs, J. Murray. Flight speed of the old-squaw, Auk (F. C. Lincoln, Fish and Wildlife Service, Dept. of the Interior, Washington 25, D. C. $1.00 a copy), 62(1), Jan. 1945, pp. 135-136.

At a favorable place, numerous observations were made indicating an average speed with a favoring wind of 61.6 mph. The wind was estimated to average 11 mph, leaving the net or air speed of the ducks 50.5 mph.

U. S. Government: Fish and Wildlife Service

Gabrielson, Ira N. Fish and Wildlife Service in Ann. Rep. Secy. Interior 1944 (Supt. of Documents, Washington 25, D. C. 45 cents a copy), 1945, pp. 185-198.

The Annual Report covers somewhat less than 16 pages this year, a new low (see remark on p. 2). It summarizes in almost the briefest possible way the activities of the organization for the fiscal year 1943-44 and contains throughout remarks upon postwar plans.

U. S. Government: National Park Service

Drury, Newton A. National Park Service in Ann. Rep. Secy. Interior 1944 (Supt. of Documents, Washington 25, D. C. 45 cents a copy), 1945, pp. 207-233.

Report is made on the handling of wildlife overpopulation problems: buffalo in Yellowstone, deer in Zion, and elk and deer in Rocky Mountain, national parks. Wildlife investigations of the year also are summarized. Bear feeding was eliminated. Merriam's wild turkey was stocked in Mesa Verde where it is known to have lived in prehistoric times.

WILDLIFE LEAFLETS

Issues of interest to wildlife managers additional to those previously mentioned are listed below. Copies of these mimeographed leaflets can be obtained from the Fish and Wildlife Service, U. S. Department of the Interior, Chicago 54, Ill.

261. Status of migratory game birds: 1943-44, 10 pp., 2 tables, October 1944.

Annual report on the results of observations during both breeding and migrating seasons in all the major flyways and from Alaska to the southern boundary of the United States. In general the situation seemed favorable and the greatest fall migration in a generation was expected. Special consideration is given to the woodcock, the not too favorable status of which is reported as unchanged, to Wilson's snipe, for which a slight gain is reported. Rails are noted as increasing and the coots are deemed to be undesirably numerous. Of doves, the mourning made a satisfactory recovery toward normal numbers, the white-winged should be more systematically managed, and the band-tailed is reported as increasing in Colorado.

264. Emetic agent in toxic rat bait, a safeguard, by H. J. Spencer, 5 pp., December 1944.

Report on experiments with various agents, of which tartar emetic conduced to the survival of 107 or 84 percent of 132 dogs and cats fed 1 to 5 minimum lethal doses of zinc phosphide, thallium sulphate, and barium carbonate.

265. Some publications on upland game birds, by Ralph B. Nestler, 11 pp., March 1945.

A bibliography of periodicals and of other publications dealing with upland game birds in general, and with those of 6 groups (including guinea fowl), classified as to their subject matter.

268. Protecting home gardens and small fruits from attack by birds, by Johnson A. Neff, 14 pp., April 1945.

Statement as to the birds most commonly involved in damage to home crops and their legal status. Suggestions as to control through exclusion, repellents, nest destruction, shooting, trapping, and poisoning. Bibliography of 18 titles.

NOTES AND NEWS

In "A joint statement of policy by the United States Army and the United States Public Health Service" on the use of DDT for mosquito control, the following two paragraphs relate to wildlife:

"The use of DDT as a mosquito larvicide will be limited to experimental investigations and to situations where DDT has definite advantage over other larvicides in saving materials and manpower, and where it presents no hazard to fish and other wildlife.

"Distribution of DDT from aircraft for large-scale area control of mosquitoes in military and adjacent areas in the United States will be limited to projects conducted with due regard to the possible effects of DDT on beneficial insects and all forms of plant and animal life and in accordance with safeguards established by the Surgeons General of the Army and the United States Public Health Service."

The Fish and Wildlife Service will cooperate in studies of the possible effects of this new and powerful insecticide on vertebrates.

In January 1944, a "National Conservation Policy Conference" was held in Washington. The proceedings have recently been issued in printed form (octavo pamphlet of 107 pages) and may be obtained from the American Wildlife Institute (Investment Bldg., Washington, D. C.). Statements are included by representatives of all Government conservation agencies as well as responses by most of them to questions propounded at the meeting.

The "Arctic Manual" (The Macmillan Company, 60 Fifth Ave., New York, N. Y. $3.00 a copy, xvi+556 pp., illus., 1944), by Vilhjalmur Stefansson, may be of interest to numerous readers of WILDLIFE REVIEW. It deals with the physical geography, climate, and weather, natural light, animal life and vegetation of the Arctic, and discusses the management of shelter, heat, artificial light, food, drink, and clothing for survival there, and in addition health, accident, and disease, travel, transportation, hunting and fishing, and the building of snow houses. The last-named section is fully illustrated.

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